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VOLUME 8, NUMBER 2

SUMMER 1986



THIS ISSUE: Focus on computers.

- Boise Cascade Plans Ahead
- Forest Service Eases the Paper Loads: Interview
- Women's Response to Computer Technology
- Are Young Girls Encouraged to Learn?
- Artificial Intelligence



Molly Stock, Professor of Forest Resources, University of Idaho, on sabbatical at Boeing's Artifical Intelligence Center in Seattle.

WOMEN, COMPUTERS AND THE GENDER GAP



A popular cigarette company has made good use of the advertising slogan "You've come a long way, baby." But have we? In the Bible, a man 20 to 60 years old was worth 50 silver shekels while a woman was valued at 30 (Leviticus 27:3-4). Curiously, the current wage ratio is the same; women earn about 60 cents to the male dollar! Historically, women have been viewed as something less than their male counterparts. Aristotle commented that women, like slaves, were able to listen to reason, but were not themselves capable of reason. For generations our Western culture has developed, nurtured, and passed on stereotypes of male and female beings. St. Thomas Aquinas remarked that a woman is born due to a moist wind blowing from the south, and the idea that a female is an incomplete male was put forth by Freud. Thomas Jefferson wrote: "Were our state a pure democracy, there would still be excluded from our deliberations women, who, to prevent deprivation of morals and ambiguity of issues, should not mix promiscuously in gatherings of men." More recently, Bobby Riggs, before his famous tennis match with Billy Jean King, pronounced that a woman belonged in two places, the bedroom and the kitchen—in that order.

Differential gender treatment begins with parents, continues through the educational system, follows one throughout the workplace, and lasts a lifetime. Research indicates, however, that the difference between two individuals is greater than that between the two genders. It's hard to accept the fact that women with 5 years (or more) of college earn less than the average man

with a high school diploma; women with 4 years of college average less than male high school dropouts. A 1979 survey of Society of American Foresters membership reported that even though women members had higher GPA's, they also had a higher percent of unemployment. Those employed supervised fewer people, and felt more discrimination than men.

Years ago, when I was advocating that the Division of Forestry at West Virginia University have word processing capabilities, a close male colleague (who viewed himself as the John Wayne type) asked me: "Is this something that our average female secretary can handle?" I remember replying that it was indeed something that the average female secretary or a very bright male professor could handle. This occurred in the spirit of good humor—but it does address the very serious issue of how gender treatment and computers will affect current and future generations. Sadly, some see women primarily as word processors and men as programmers. In general, computer teachers in the 80's still favor boys with more attention, more encouragement, and more detailed instruction. Vocally, boys dominate classrooms. Even textbooks contain a very strong bias against girls.

Typically, female career possibilities have been considered to be more restricted than the range open to males. At the same time, women and minorities will be 75 percent of the labor growth between the years 1990 and 2000. Due to society's and the educational system's sexist orientation, available role models, curricula, advising systems, and teaching materials—females do not enter science fields at the same rate as men. This will impact the environmental decision-making ability of future generations. An informed public must be constituted of both genders.

In the past, females have been underrepresented in science and math classes; recent data suggest that the same is true for computer science. At this stage, as Sherry Turkle, author of *The Second Self* points out, the question can't really be, are computers good or bad? But rather, how can we make a computer culture that is good for all of us? A critical concern is, will the new technology empower women or reinforce their subordinate position in the workplace? To help us sort through these and other questions, the emphasis in this issue of *Women in Forestry* is on computers and women. Article content ranges widely from general discussions of technophobia, to specific studies, and on to women and computers in forestry education at a land grant university. These articles give some indication of the diversity of problems and solutions that involve computers in today's natural resource management.

-Lei Lane Burrus-Bammel

WOMEN IN FORESTRY

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LETTERS AND OPINIONS

As a landscape architect working for the Forest Service, I find most of your articles relevant to my job, both in the office and in the field. But articles which pit men against women (the We/They syndrome) or emphasize the gender differences, I find disturbing and frustrating. We must work together. It takes compromise and willingness (in and out of the field) from both groups in order to accomplish our natural resources objectives.

> Deirdre Buschmann Forest Landscape Architect Stikine Area, Tongass National Forest Petersburg, Alaska

What a nice surprise! The Spring issue is a great one and you did a fine job with my interview and the cover and interior photos.

> Anne LaBastille New York

Your magazine is great. The Spring 86 issue was full of valuable information.

> Pam Muick Department of Forestry & Resource Management U.C. Berkeley Berkeley, California

▶Keep up the good work. I can't wait for the next issue.

Tammara VanRyn-Lincoln West Lebanon, New Hampshire

To our readers:

In early summer, we received an anonymous letter (our first) from someone who disagreed with one of our authors. I circulated the letter to other editors and colleagues to see whether or not there was any reason to change our policy against printing anonymous letters. Easily understood legal, moral, and ethical reasons all argue against printing anonymous letters. We all agreed not to change that policy, but to affirm our resolve to withhold names if, in our judgment, the letter warranted it and the writer requested it. Some controversial positions need to be presented without subjecting the writer to backlash from co-workers or employers. We think the name-withheld policy takes care of that.

> Dixie Ehrenreich Managing Editor

▶ Please sign me up for a subscription of my own. I find I always borrow the latest issue. Now that I am in a position to advise others, I want access to the information and ideas presented in Women in Forestry.

> Penny Morgan School of Renewable Natural Resources University of Arizona Tucson, Arizona

▶Women in our region have done a great job in following up on the action plan outlined at the SAF Dallas Conference [see WIF Vol. 8 #1]. We have a regional network started. Plans are underway for a speakers bureau and we are planning a Midwest Conference in April of 1987.

> Christine L. Thomas Assistant to the Dean College of Natural Resources University of Wisconsin Stevens Point, Wisconsin

▶When reading the last issue of WIF, I was astounded at how <u>little</u> I knew about the existing programs and regulations designed to combat sexual harassment and sex discrimination. "History and Summary of Consent Decree: U.S. Forest Service," by Diane K. Winokur, "Federal Government Programs to Achieve Equal Employment Opportunity," by Andrea U. Warner, and "Sexual Harassment: What Is It?" by Peggy Fox, should be reexamined by readers. This is important stuff.

I can't help but wonder how different my career would have been if I'd been aware of my options and alternatives when facing harassment and discrimination. WIF should make reprints of these three articles available for purchase. Comprehension of these laws and regulations should be a requirement before one takes any job, just as an understanding of traffic laws is mandatory before one is allowed to drive.

> J. Roberts Atlanta, Georgia



FROM QUILL TO COMPUTER:

The Word Processor Has Done Away with Writer's Cramp But Can It Do Anything About Writer's Block?*

Robert Sekuler

very advance in technology manages somehow to transform the creative process. Improved fabrication of steel forms stimulated a new vision of architecture's possibilities. Developments in electronics gave musicians unimagined creative freedom and artistic control. Now, a relative new technology, word processing, may be transforming the art of writing. It is too early to predict all the ways in which writing will change, but we can get some clues by looking at research in cognitive psychology and by studying the experiences of people who use word processors.

The range of available word processors is large. They vary in size from one small box weighing less than four pounds to a desk load of heavy equipment. Their costs are similarly variable--from about \$1,000 up to \$20,000. But, basically, they are all the same--electronic devices that allow you to type, store, modify and print text.

The differences between writing longhand, typing and word processing are readily apparent even to the most reluctant first-time user of a word processor. Writing with paper and pencil is slow, laborious and downright painful in time. Composing on a typewriter helps with speed and physical comfort, but correcting a typo, inserting a new sentence or repositioning a paragraph requires messy erasure, fumbling with correction fluid or "cutting and pasting"--physically relocating a misplaced paragraph with scissors and tape.

The word processor accomplishes these and several other tasks electronically, and consequently can transform writing in three distinct ways: it can ease the mechanical drudgery of writing; it can enhance our motivation and willingness to spend time writing; and it can produce qualitative changes in the way we go about writing.

Drudgery

Nearly all how-to books on writing stress the importance of revision, typically advising "revise, revise and then revise some more." Many writers treasure the tools of revision--erasers, scissors, tape, correction fluid and wastebasket--almost as much as they value the implements of production--pencils, pens and typewriters. But, while teaching freshman composition a few years ago, I rediscovered what teachers of English have long known: most people have a strong aversion to revision. Teachers may deplore this reluctance to revise, but it is easily understood. Ordinarily, revision is both difficult and tedious.

*Reprinted with permission from <u>Psychology Today</u> Magazine Copyright @ 1985 (APA). A word processor certainly can make cleaning up typos, misspellings and punctuation errors easy to do. But good prose, of course, is not just a collection of neatly displayed and properly constructed sentences: to lead the reader from one idea to the next, naturally and without hesitation, the writer must provide appropriate road signs--clear transitions and connections between sentences, paragraphs and larger sections.

Though these transitions are often as hard to produce as the elements themselves, research has shown that readers (and writers) pay a price when writing does not flow smoothly. Marcel Just and Patricia Carpenter, cognitive psychologists at Carnegie-Mellon University, presented readers with two sentences--either adequately or inadequately linked--as in the following pairs: 1.A) It was dark and stormy the night the millionaire died. B) The killer left no clues for the police to trace. 2.A) It was dark and stormy the night the millionaire was murdered. B) The killer left no clues for the police to trace.

As the participants read, Just and Carpenter tracked their eye movements and found that on average, readers spent half a second less on the second pair of sentences than on the first pair. Why? In the second pair, the transition is clear: the writer uses the phrase "was murdered" in the first sentence to set the reader up for "the killer" in the second sentence. When transitions are missing, you must stop and mentally create them yourself--a distracting and time-consuming task. If you can imagine reading an entire article with sloppy connections not only between sentences but between paragraphs and collections of paragraphs, you can see why good transitions are so important.

How would a word processor help? As Peter Wason, a psychologist at University college, London, observes, "Writing is difficult for some people because they try to do two incompatible things at the same time: say something, and say it in the most acceptable way." In Writing With A Word Processor, William Zinsser suggests that you forget links and transitions initially. Concentrate instead on "letting your creative motor run the full course at full speed; repairs can always be made later." Following Zinsser's advice, you can mark each place where a transition might be needed (say with an "XXX"). Later, you can instruct the word processor to locate each "XXX" and display the surrounding text, and then develop and insert the needed transitions. Many people, in fact, do the same thing when composing with pen, pencil or typewriter, but the whole process is less convenient than it is with a word processor and therefore less likely to get done

Word processors are also helpful because they make it easy to get a clean printed copy of your latest revision. Andrew Fluegelman and Jeremy Hewes, authors of <u>Writing in the Computer Age</u>, argue that getting clean copies on demand offers positive psychological benefits. The copy's attractive, professional appearance provides reinforcement: when you have been really struggling with the text, the clean copy holds out a promise of better times ahead. Also, the clean copy makes it easier for you to review the material as any other reader would, without interruptions from complex marginal notes, messy insertions and deletions.

Motivation

Word processors make an important contribution, improving motivation not only during revision but also during the entire writing process. Once beginners overcome their fear and awe of word processors, they realize that these imposing gadgets can make writing more bearable for several reasons. For one, word processors eliminate one of the more perplexing obstacles for many writers--the blank sheet of paper that seems to stare back reprovingly. Some people claim that a blank word processor screen actually evokes less terror than does a blank piece of paper. Since few word processor screens display the equivalent of an entire 812-by-11-inch page, Fluegelman and Hewes say you can fill a screen faster than you can a sheet of paper, in effect dividing the chore into smaller, more manageable subtasks.

One friend of mine, however, is bothered less by a blank page or screen than by another common problem--writer's block. When he's stuck on one part of an article he must write, he quickly detours to another part that will be easier to complete. Not only does the detour give his writer's block sufficient time to work itself out, but when he's finally gotten all the parts complete and in place, the word processor can remove all telltale marks of the chaos from which his article emerged. Many people take similar detours when writing longhand or on a typewriter, but both methods tend to promote thinking in one direction--from a document's beginning to a document's end. Inserting material into something you've already written is possible but, again, not convenient.



How We Write

Though the mechanical and motivational effects of the word processor are powerful in their own right, they may prove minor compared to one potential effect of this new technology: changing the way we think about the writing process itself. To appreciate this fully, we'll have to consider what creative writing is.

Many textbooks and teachers describe creative writing as a series of clearly defined steps. According to this view, you pick a manageable topic, do the required research, compose an outline, flesh out that outline and, finally, polish what you have written. Though this view encourages the idea that writing can be taught and learned in simple and convenient chunks, many cognitive psychologists--and many successful writers--have a different understanding of the writing process.

The novelist E.M. Forster put it well, asking: "How do I know what I think until I see what I say?" Kurt Vonnegut makes the same point when he observes that when writing, he feels like someone who is "watching a teletype machine in a newspaper office to see what comes out." Fine for the creative genius, you might say, but what about the average person?

Psychologists Linda Flower and John Hayes of Carnegie-Mellon University asked college students to write essays on women's rights or abortion and, at the same time, describe aloud what they were doing. Their research suggests that good writers do not do as much detailed mental planning as we might think. In fact, Flower and Hayes found that writers often did not know precisely what they would write until they had written it.

Though these findings are somewhat discomforting, suppose that they are true. What are the implications for writing on a word processor? Because it makes it easier both to produce and to modify our writing, a word processor may also make it easier to find out what we think.

One way to understand this is to consider what Susan Horton, a professor of English at the University of Massachusetts, calls reformulation. In <u>Thinking</u> <u>Through Writing</u>, Horton likens revision to tinkering and reserves the term "reformulation" for significant changes in organization, structure and clarity. Reformulation, then, is a form of creative play, requiring intuition and experimentation. Reviewing the text, you may feel that a change is needed at a particular place without knowing precisely what that change should be.

One way of resolving this dilemma is to ask a series of "what if" questions. This type of question has been popularized by computer programs, such as VisiCalc, used for financial planning. In such programs the user enters all the relevant data and assumptions--for example, interest rates. The program then projects an outcome based on those data and assumptions. You can then ask a "what if" question by telling the computer to recalculate its projections based on some changed assumption: what if interest rates rise, for example.

These programs encourage the same kind of playful, creative experimentation that an experienced word processor user comes to depend on. You simply examine what you have already written and then try various "what ifs"--"what if I invert this sentence . . . move this paragraph . . . delete this phrase?" and

so on. If you've made an improvement, it can be retained; if not, you can try again. By making alternative reorganizations more accessible, a word processor encourages you to experiment where you probably would not bother on a page of typed manuscript.

A word processor can certainly help an individual to write, but often writing involves collaboration with others. Though there haven't been any formal studies, in my experience a word processor can prove equally helpful when collaborating with another author.

When Randy Blake, a colleague at Northwestern, and I collaborated on a textbook, we divided the chapters between us and worked separately to prepare very rough first drafts. When a rough draft was ready, we sat down together at one word processor, using one keyboard but two display screens so that each of us had an unimpeded view of the action. Then we took turns reading aloud, revising and reorganizing the text in tandem. The idea was to encourage joint work before the text had become too polished and therefore resistant to change. Working together in this way, we generated far more "what if" questions than we would have singly. The result is a text that not only reads well (we're told) but appears to be seamless; reviewers say they can't tell who wrote what.

There's little doubt that, when used properly, a word processor can be a valuable tool for writing. But like all stories, this one has another side that should not be ignored. Some writers become so entranced by these devices that the new-found power to revise turns into an obsession. When that happens, the word processor tends to resemble its counterpart in the kitchen--the food processor. Perhaps you know, as I do, cooks who can't resist using their marvelous toy, so that everything they create is sure to be very well sliced, diced or pureed.

There's a lesson here, not just for cooks and writers but for all of us. No matter how powerful the technology we may have to help us, we still need good judgment and self-control.

Robert Sekuler is a professor of psychology, ophthalmology and neuro-biology/physiology at Northwestern University and coauthor of <u>Perception</u> (Random House).

TECHNOPHOBIA: DIAGNOSIS, PREVENTION, AND CURE

Molly Stock and Beth Kersey Department of Forest Resources University of Idaho Moscow, Idaho

echnophobia affects people of all ages and educational levels. Understanding its symptoms, the underlying reasons for its occurrence, and possible strategies for prevention and cure are important to us as professionals or parents in an increasingly technological age.



DIAGNOSIS

Even those who have never heard the word before have some intuitive sense of what technophobia is. Strictly speaking, it means "fear of technology." In broader terms, it includes fear or avoidance of machines, numbers--any system or device that is relatively new to us and that appears somehow complicated and difficult to understand.

Technophobia is very common among scientists as well as non-scientists. Meg Greenfield (1986) was probably close to the truth when she said that "too many non-scientists are crippled by insecurity when the discussion involves anything more technologically complicated than a mortar and pestle." Technophobia can strike people confronting systems as diverse as banks, mathematics, computers, modern telephones (with buttons, stars, and pound signs, all with different meanings), sewing machines, or bicycles. Each of you will probably see something on this list or can think of something else of technological nature that can make you feel nervous or hesitant. A very competent businesswoman friend of ours who works daily with machines whose purpose is totally obscure to most people has been paralyzed by the complexity of telephones at airports. Another woman, a Ph.D. in science, recently balked at the suggestion that she could learn the principles of efficiently riding a 15-speed mountain bike. Sherry Turkle, the MIT professor who wrote the book, <u>The Second Self:</u> Computers and the Human Spirit, says she used to be a technophobe. "My idea of what should happen when a machine broke was that it should be taken away-preferably by a man, and it should be taken to that place where men take those things" (McGrath 1985).

<u>Computer phobia</u>. Obviously, there are all kinds of technophobia. To keep the subject within manageable limits, we're going to limit much of this discussion to computers, to computer phobia. What are the symptoms of technophobia, or computer phobia? In some of the more serious cases, there can be physical symptoms. A small percent (5%) of people who try to use computers actually show symptoms of classic phobia: nausea, dizziness, cold sweat, and high blood pressure (Rice 1983). More common is simply avoiding the types of technology, such as computers, that create anxiety. Technophobia can strike when you just read about technological subjects. You might avoid reading about space shuttles or computers because the subject alone intimidates you.

<u>Technophobia in women</u>. In general, women are considerably more technophobic than men. As Lindsy Van Gelder (1985b) points out,

Although there are lots of notable exceptions to the rule, computers generally turn women off--or, more properly, they turn off vastly more women than men . . . There's a distrust abroad in the offices and schools of the land--one so widespread that it's now been given a name: technophobia. What's especially depressing is that it seems nearly as rampant among young girls who have to take their places in an increasingly technological world as among grown women.

Why should this matter? A lot of people, men and women, are afraid of snakes or spiders and they seem to get along fairly well in life. Is technophobia a real problem? We believe that any phobia becomes a problem if it significantly interferes with our lives or limits our options. Certainly there may be some fairly rational reasons for distrust of both snakes and computers. Many snakes are poisonous, and there is some evidence that computers are related to certain eye problems and possible damage to unborn children. But irrational aspects of fear or avoidance are something else. Fear of snakes may not be important in cities or many temperate regions, but it can be debilitating in the tropics. Similarly, technophobia in this increasingly technological world can be a serious handicap requiring attention and effort to overcome.

<u>Career issues</u>. Serious career issues are at stake. Less than 15 percent of U.S. families fit the traditional model of having a single income, with the wife working at home and the husband earning money to support the family. Whether single, divorced, or widowed, most women don't have the option of not working. And if you need or want a job, you want to be able to do something that you enjoy and that pays well.

The U.S. Department of Labor predicts that by 1995 there will be several million people employed in occupations <u>directly</u> related to computers. Millions of others will have to use computers as routine parts of jobs that now don't require them. So we're not just talking about careers that explicitly require computer competency at the very outset. Within the next few years, the ability to use computers will be taken for granted, much as the ability to read a newspaper is at present.

Clearly, then, to the extent that we let computers be defined as a male subject, like math, we're setting women up to have limited career options. In her book <u>Overcoming Math Anxiety</u>, Sheila Tobias describes a particularly revealing survey of freshman men and women entering the University of California at Berkeley in 1972. Of entering men, 57 percent had taken 4 years of high school math, but only 8 percent of women had that much math. Without 4 years of high school math, a student could not take many of the freshman courses required for various majors. The result was that 92 percent of the freshmen women were excluded, when they arrived, from 10 of 12 colleges, and 22 out of 44 majors. In other words, most of the career options available to most men were not available to the women.

Options are the real heart of the matter. If a person wants to be able to make choices, there are certain things she must do, and one of them may be to become familiar with computers, to overcome any nervousness she might have around them.



MOLLY STOCK, professor of Forest Resources at the University of Idaho, was the last person in history to take graduate level statistics using a Monroe calculator. She only began to confront technophobia after meeting her first computer in 1970.

PREVENTION AND CURE

Prevention and cure of technophobia requires some understanding of the underlying reasons so many of us are technophobic. We've made a list of what may be some of the main factors contributing to technophobia in girls and women. These are not presented in any particular order of importance, but all are interrelated. Some of them are things we can take direct and fairly immediate action to change. Others are more broadly based on societal and cultural attitudes, and will change only slowly.

Unconscious, automatic rejection of the unfamiliar. Human beings have an intrinsic tendency to avoid the unfamiliar. From a biological point of view, such behavior makes considerable sense. Unfamiliar things can mean danger to ourselves and to our families. Technophobia has strong roots in such avoidance behavior, and takes a conscious effort to overcome. It is perhaps analogous to rapelling off a cliff in mountain climbing. At first, all your physical and biological instincts tell you, as you attempt to back off the cliff, that you are doing something very foolish and should stop right there. It takes a strong intellectual effort to overpower those instincts, especially the first few times. Greater encouragement of boys by parents and teachers. Parents and teachers expect boys to be better at computers. They are more likely to encourage boys to use computers, and to make investments in computers for boys. For example, there are three times more boys than girls at summer computer camps. This difference might appear, on the surface, to indicate that girls are simply less interested. But the preponderance of boys increases along with the cost of the camp, indicating that parents are much more likely to invest in their sons in this area (Van Gelder 1985b).

Peer pressure. Peer pressure is often strongly against young girls showing competence with computers. An analogy can be drawn with Sheila Tobias' (1978) description of the course of events in math:

- 1) Each year math gets harder and requires more work and commitment.
- Both boys and girls are pressured, beginning at about age 10, not to excel in areas designated by society as outside their sex-role domain.*
- 3) Girls now have a good excuse to avoid the painful struggle with math (or hard courses); boys don't. "Very bright girls who excel at almost everything in school feel quite comfortable failing at math or computer classes, not simply because their parents allow it and their peers accept it, but because it provides a solution to the conflicts their brightness creates for them."

Different childhood experiences with objects. As children, boys are encouraged to have more experience with technologically complicated objects. Children of both sexes need to be encouraged, from a very early age, to work with complicated things in a non-threatening environment, but boys get this opportunity much more often than do girls. Consider for a moment the toys that boys and girls play with. Have you ever watched a little girl play with a doll? Most of the time she was talking and not doing, and even when she is doing (dressing, undressing, packing the doll away), she is not learning very much about the world. A doll advertisement I saw recently listed three things that could be done: pretend to give it a bottle, dress it, and "hold it tight." These may be important nurturing lessons, but they aren't very difficult or challenging. Imagine her also taking a doll apart to study its talking mechanism. That's not the sort of thing she is encouraged to do.**

More boys, in contrast, have balanced themselves on a wall or a rock. They have watched marbles or stones spin and fly. The trucks they get are moving objects. Things in little boys' lives drop and spin and collide and sometimes explode. By the time he is 10, the more curious boy will have taken apart a number of household and play objects (Tobias 1978). In all this he is learning concepts and skills that will be useful in dealing with technology later on. It seems fairly obvious that the absence of things that move, of complicated toys or activities, in little girls' lives contributes to their later fear of technology.***

Association of computers with math and science. With little logic to support it, there is a cultural association of computers with math and science. Computers can be used for anything, but they are introduced, in many schools, in math and science programs, areas still perceived by many girls as "male" subjects, and where girls have a history of low expectations (Rosser 1982). Parents, peers, and teachers forgive a girl when she does badly in math at school; boys are not so easily forgiven (Tobias 1978). By linking computers to something that's already a source of anxiety or avoidance, an avoidance of computers is automatically generated.

Lack of role models. We hardly ever see women using computers. The computer industry itself contributes to the impression that computers are for boys by directing marketing and promotion almost entirely towards the male executive and parents of sons. Even the MacIntosh, one of the most "user-friendly" personal computers on the market, has only males in its user's manual illustrations. The importance of this sort of exclusion cannot be minimized. Joan Targ, founder of the Palo Alto, California, school district's Computer Tutor program, discovered that the computer abilities of both girls and minority boys improved dramatically if they were given their initial training by a peer. When a girl comes in for the first time, it's important that she looks at a class full of strong, competent girls having a good time using the computer. "After she has the skills, it doesn't matter. But in the initial contact, kids ought to be able to be confident that their being there is reasonable and appropriate" (Gelder 1985b).

The impostor phenomenon. The feeling we get for what is appropriate and what isn't leads directly to the idea of the impostor phenomenon (Clance 1985). This occurs when you feel you don't belong, that although you may appear to be like one of the group you are with, you are really just faking it and pretty soon someone will find out. Knowing a few facts about this phenomenon might help alleviate a lot of technophobia in women.

Fact #1. This feeling is very, very common. For example, in almost any new class that is perceived as a "difficult" subject, most of the students think that all the others in the group are much more confident and smart and capable. Each one of them thinks he or she is the only one that is scared, confused about what to do, and afraid of failure. Lots of people feel this way. More do than don't. In the several years that we have been discussing this subject, we have only met one person who didn't know what we were talking about when we described the impostor phenomenon.

Fact #2. This feeling has almost nothing to do with a person's actual abilities. It is related to the difference between a person's past experiences and his or her current situation. If you are doing something that is very different

^{*}Unfortunately, even among adolescent boys, there is considerable peer pressure not to be a "nerd"--an overly bright or studious individual--or at least not to appear like one.

^{**}An even more depressing example is those little plastic ponies whose major purpose, for the little girls who own them, is to have their manes combed.

^{***}While we are thinking about this, we might also consider some fundamental skills that most boys do not acquire. How many boys, for example, know how to sew a button on or how to sew a seam with pins and sewing machine, to clean a room properly (using the correct attachments for the vacuum cleaner) or make a bed, to plan and prepare a nutritious meal, to set a table or to clean up after a meal?

from what you have seen others do, especially what you have seen other women do, you will start by feeling like an impostor. As Sheila Tobias (1978) says, we feel dumb when we move outside our "comfort zone", and this can become a mental prison if we let it. Fortunately, impostor feelings fade with time, and if you are aware that feeling like an impostor doesn't mean that you are incompetent or that you shouldn't be there, you can live with that feeling of anxiety for as long as it takes to get over it.

Fact #3. Feeling like an impostor is not the same as lacking self-esteem or confidence in general. A person can be generally very confident and feel very good about herself, and suddenly get "impostor" attacks in specific types of situations.

Computers have been designed by men for men. Computers and computer programs have been designed for men to do the things that men traditionally do. And what men do and what men think are different, in important ways, from what women do and what women think. In the early days of attempts to gain equality for women, differences were minimized, and the main message that we often got was that "women are as good as men" or that "women, at work, are the same as men." Now we are realizing that that is, of course, not entirely true. Women are much better at some things in the working environment than men are. (And we're not talking about being better at doing simple repetitive tasks!)

We'd like to make some generalizations here about what motivates men and women in their jobs (other than earning money). These generalizations are certainly not true for all men and women, but may be true for them as groups.

For a long time we believed that what Betty Harragan (1977) told us was true: men learn teamwork in sports as they grow up, while women, having fewer such opportunities, function poorly on teams, the basis for most work situations. Thus, women are handicapped in a work environment established by men. This view no longer seems quite accurate to us. For men, the goal seems to be winning, turning out a product, producing something. If teamwork is necessary to win, they will learn to work with the team but the team itself is secondary. It also seems to us that, to many men, quality of the product is secondary to being the first to have produced it or having produced the greatest quantity of it.

We're beginning to believe that women understand teamwork in a much more fundamental and natural way than men do. Marilyn Loden, a well-known management consultant, says "A feminine leader's basic objective is to produce quality output. To a masculine leader, winning is the primary goal" (Schwartz 1986). Women want to do a good job and not hurt people while they do it. Industries and corporations are just beginning to find that for these very reasons women often make superior managers and administrators.

Neither method is "right," but if one group predominates in a given culture, its 'approach will soon appear to be the right way (Van Gelder 1985a). (Or, as Gloria Steinem (1983) once said, if men menstruated, blood would be a symbol of power.) So the way men do things in science and technology becomes the way we measure all people's performance in those areas. The computer culture thus far has been made by and for men and by and for engineers. A perhaps pertinent corollary to this gender difference in approaches to technology relates to video games. One way kids get introduced to computers is through video games. For many girls, video games are a permanent turnoff (Van Gelder 1985b). It is widely documented that what girls don't like is the competitiveness and outright violence of most video games. Beverly Hunter, a computer researcher, finds that girls are interested in a computer when they can do something "meaningful" with it (Rosser 1982). When computer software moves beyond the current violent, noisy games and provides useful, problem-solving tasks, Hunter thinks that girls will be as excited about using computers as boys are.



Today, many girls show disinterest or even marked dislike for what computers do. One study of high school boys and girls in a required computer course found that while 60 percent of boys genuinely enjoyed computers, only 5 percent of girls ever used them voluntarily. Lindsy Van Gelder (1985b) says, "We could all pause here, throw up our hands, and listen respectfully for the sound of stampeding male feet. But luckily . . . what computers do isn't graven on stone . . . The computer is a universal machine that can do whatever its software tells it to. Today's computer came out of a male culture of electronics hobbyists, who wrote software for themselves, which in turn attracted other men, perpetuating the male culture." If the computer had been invented by women to do more of the things that women commonly do, she says, "a lot of men would be technophobic."

In this context, the subject of artificial intelligence (AI) is particularly exciting. One of the primary aims of AI is to make computers more intelligent, interactive, and flexible--a goal that, when achieved, will go a long way towards reducing computer phobia in both women and men.

Excessive faith in ability and talent rather then effort. We rely too much on what we call "talent" and "ability" and don't fully appreciate the importance of effort, especially in technical areas. A recent study, for example, showed that American students are worse at math than their Japanese and Chinese peers, and that they start falling behind in kindergarten (Stevenson et al. 1986). (All of these children performed equally well on reading and general intelligence tests.) A large difference in cultural attitudes explains much of this disparity. Chinese and Japanese parents give their children a lot more help with their math homework than U.S. parents do. Chinese and Japanese parents believe that the most important thing is "effort." American parents, however, believe that "ability" is the main reason for academic success. You either have it or you don't. If we're not good at something we blame our genes, and this is more true for girls and women. When boys fail a math quiz, for example, their excuse more often is that they did not work hard enough. Girls who fail are three times more likely to attribute their lack of success to the belief that they "simply cannot do math" (Tobias 1978). They perceive failure as a personal inadequacy or lack of ability. (Interestingly, in contrast, when women succeed they are more likely to attribute their success to luck or hard work, not ability.)

OVERCOMING TECHNOPHOBIA

There are several ways that technophobia can be prevented or cured. Here are a few suggestions:

Confront new technology one step at a time. Ease into it. Don't think you have to know everything before you start. A first step might be finding a sympathetic and patient individual who is willing to sit down with you for an hour or so and show you a few basics. If you feel overwhelmed, simply stop adding new information for a while and work on mastering what you have begun to become familiar with. Once you have a personal computer, for example, you will soon find yourself inundated with advice on what software to buy. Start with something cheap and easy to learn to use. Then, with some practice, you'll be in a much better position to evaluate other types of software, and to determine if they might suit your purposes better. If you take this one-small-step-at-atime approach, you'll be surprised at how fast you will learn about what appears to be relatively difficult technology.

Make an effort to Learn the language. understand the meaning of technical terms. Such terms often create a "jargon barrier" that gives a clear competitive advantage to those who understand the arcane terminology of a subject area. Certainly much jargon is justified because it produces a means of concise communication, but it can also effectively screen out those intimidated by the new language. With understanding of such terms, however, comes control and familiarity, and a reduction in anxiety created by what was formerly unfamiliar (Cumming 1986). In computers, for example, some of the simplest terms to start with are software and hardware. If you get past these, you can then, if necessary, get on to bits and bytes.

Learn to type. The ability to type seems to be very important in avoiding computer phobia. A recent study found that age or educational level is not directly related to avoidance of computers, but the ability to type is (Rice 1983). So to begin to adapt to using a computer, a person should learn to use a keyboard. Typing used to be a skill for low-level occupations. Now it has become a skill for the highest level occupations as well.

<u>Treat "impostor" feelings as an unavoidable fact</u> of life. After years of studying successful people, Earl Nightingale (1978) concluded that successful people do what failures don't like to do. Starting to learn something new, especially something that's intimidating and difficult, is not much fun for anyone. None of us like to feel anxious, out-of-place, or dumb, but successful people don't let these feelings stop them. Substitute belief in effort for belief in intrinsic ability. Really learning about computers involves getting your hands on one and working at it. Our excessive faith in ability and talent holds us back in this regard. It gives us an excuse for not working as hard as we should. Wayne Dyer (1980) says that:

People think that they'll be good at something once they get some confidence. They don't understand that you get confidence by doing something over and over. That's where the confidence comes from. You don't start with confidence. When you start something it's hard, it makes you nervous. Confidence comes after you've done it lots and lots of times. The only way you get confidence to be good at anything is by first going out and doing it, and doing it, and doing it, again, and again, and again, and after a while the confidence comes.

Overcoming technophobia, gaining confidence, comes through doing something one step at a time. It is well worth the effort.

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BETH KERSEY plans to complete her M.S. in Forest Resources from the University of Idaho in late 1986. A former technophobe, unsure of what to do with a computer, she now shows others.

CUMULATIVE CONSEQUENCES OF COMPUTER HESITANCY

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omen in the "Information Society" are confronted with computers daily. Computers control the heating and cooling in many public buildings. Many supermarkets now have computers which call out the name and price of each item while computing the cost of our groceries. Computers control the fuel mixture in our cars. Few of us voice anxiety about the use of these computers because they are hidden from view or are at the command of people serving us. Computer anxiety arises when we must put our own hands to them and be personally responsible for their operation. I have observed people using computers as subjects in my research on achievement motivation and computer anxiety, and I have sat beside over forty students as I initiated them into computer use for the very first time in statistical analysis and text-editing. My observations were that women were more computer-anxious than men.

Additionally, over three hundred Oakland University students in psychology, education, and business administration classes completed a 52-item questionnaire tapping attitudes toward, and anxiety reactions to, computers. The 28 attitude items dealt with issues previously identified by mass media, such as the potential abuse of privacy and inequities created because not all people can afford computers. The 24 computer anxiety items explored feelings and somatic reactions surrounding the use of computers, such as fear that computers will someday control us, or that our mistakes will affect a lot of people.

Few sex differences were isolated by the attitude questions, but women endorsed items reflecting computer anxiety to a significantly greater extent than men. Females more often than males said that they become frustrated when using a computer, they are afraid they will make lots of mistakes, they are afraid they will break the computer and destroy valuable software, and that they avoid the computer whenever possible.

It is important to understand the basis for this computer hesitancy and to speculate on its cumulative effect on women's lives in the Information Society. We will for the time being suspend judgment about whether computer mastery is a good or corrupting goal for women to pursue. We will instead focus on the nature of computer hesitancy using concepts taken from psychological research and from feminist literature.

The Other and The One

Sherry Turkle, author of <u>The Second Self:</u> <u>Computers and the Human Spirit</u> (1984), provided a compelling thesis that the computer is the second self through which people define what it means to be human. This conceptualization applies to women as well as men and evokes images of a benign alter ego through which people work out personal issues, such as need for control. However, my observation of women interacting with computers has been much less reassuring. Perhaps this was because the students I taught to use computers did not choose to work with them. They had signed up for a senior-level research design course and discovered only after they had committed themselves that computer analysis was a requirement. No, my computer-anxious students were not working out personal problems through the computer; they considered the computer to be their most pressing personal problem at the time.

When I groped for an image to describe my students' reactions to computers, Simone de Beauvoir's The Other first came to mind. The struggles of my female students learning to communicate with a computer had the awkwardness common to interactions with a totally foreign Other. Especially among mature women, the reaction to the computer was un-comprehension, not because of mental deficiency--these were highly intelligent students in upper-level research courses-but because of an insidious, dynamic-producing, learned helplessness, and performance decrements. I propose that this un-comprehension has a dynamic, motivational basis rather than a cognitive basis, because when these women would stand behind another student and help them, they could tell the other student exactly how to do what they just failed to do themselves. With their hands on the keyboards, they were helpless. Standing behind another student, they were competent teachers.

First let us explore why the computer might be viewed as an alien Other by women. In the provocative book, Women's Reality, Anne Wilson Schaef proposes that men differ from women in their dualistic assumptions about the world. While women appreciate paradox and context, men look at the world as an either-or proposition. Men's either-or, right-wrong, good-bad dualistic approach is compatible with the binary computer which must depend on just two conditions, on-off, to represent all information and operations. Professor Turkle has pointed out that the linear nature of computer programming presents a problem for women because it does not reflect their normal way of dealing with the world. Schaef labels the female system of thinking multidimensional. That is, while men think in efficient dualistic terms that are easily represented by the digital computer as on-off, women think in complex multidimensional terms that include context and paradox. Carol Gilligan's analysis, In A Different Voice, supports this interpretation; in moral decisions women consider more aspects of the moral question than men do as they, the women, attempt to reconcile ethical and interpersonal issues.

A problem arises, however, when I conceptualize the computer as the alien Other that women must deal with. As Simone de Beauvoir has described the Other in relationship to the One, it is women who were the Other and men who were the One. The Other is less powerful than the One; in fact, the Other is used by the One to define himself. The Other is unsure of herself, viewing the One as the omniscient master. Certainly, this did not describe the interaction of my computer-anxious women and their computers. The women certainly did not view themselves as omniscient masters. To the contrary, they easily became learned helpless. No, the computer was not the Other; it was the One. The computer-anxious women viewed the computer as omniscient and omnipotent. The most difficult lessons to transmit to computer-anxious people are the limitations, the stupidity of the computer. They expect it to understand anything they type; and they expect every error message to make clear and pertinent sense. Yes, the computer-anxious women had made the computer the omniscient, superior One.



Relationships with the One

As we all know, it is very difficult to establish a comfortable interpersonal relationship with a superior. When I interviewed my students to ask them how they felt when they first confronted a computer, the women expressed extreme frustration trying to understand the computer and interact with it. They wanted to establish a congenial relationship with it; they wanted to be the computer's friend. When they failed to communicate, they blamed themselves and began to question their ability to ever understand. The men expressed a desire to master the computer, to subdue it. When they received an error message, they immediately sought help and used the information they received to further their mastery. They did not assume that they lacked the ability to master the computer.

This difference in approach is consistent with Gilligan's characterization of women as more interested in establishing interpersonal relationships. In its early stages, the most felicitous relationship creates anxiety. When one attempts to establish a relationship with a rigid, foreign machine, frustration is a surety.

On a more mundane level, the experiences my students had in receiving help varied according to sex. The females reported that when they asked for help, the explanations offered by the (male) counselors were incomprehensible. The male students described their counselors as much more helpful. For one thing, the women were often "helped" by having their mistakes corrected with no accompanying explanation at all. That is, instead of explaining the meaning of an error message and clearly outlining its remedy and subsequent avoidance, the counselors would merely sit down in front of the machine, rescue the helpless women, and then leave, sometimes even muttering under their breath. While the male students received informative feedback, the women suffered an assault on their self-esteem. The women responded to this attack by doubting their own abilities.

Attributions of Success and Failure

Irene Frieze has summarized the research on sex differences surrounding the attributions of success and failure. Generally, people attribute success and failure to four causes; ability and effort, which are personal or internal causes; and to task difficulty and luck, which are external causes not under the control of the person. Generally, men attribute success to themselves and explain their failures as being the result of external causes. Women more often attribute their success to good luck, an external cause, while blaming their own lack of ability for their failures. This combination, attribution of success to an external cause and attribution of failure to an internal, personal cause, works to create low self-esteem in women.

Carol Dweck has observed teachers interacting with grade-school children and has noted that teachers help socialize these differential attribution patterns in boys and girls by praising boys for their high ability and commending girls for working hard. The un-spoken message is that girls are deficient in ability, but can sometimes make up for it by working extra hard.

The computer-anxious women I interviewed reported that they quickly questioned their own ability when they made a mistake on the computer. Researchers Lyn Abramson, Martin Seligman, and John Teasdale have added the attributional dimension, global versus specific. When a person attributes failure to lack of ability, it can be a very specific ability, such as the ability to understand a particular text-editing system, or it can be a global ability, such as the ability to ever understand any and all computers. The men I interviewed talked about their mistakes in very <u>specific</u> terms. They did not generalize their limitations beyond the task at hand. The women took a global approach to their lack of ability. They doubted that they would ever be able to understand any computer, any time, any place.



Avoidance of Computers

All but two of the people I have taught to use computers had never worked on them before. Until their senior year in college, they had managed to avoid computer use. Teachers in junior and senior high schools have told me that when computer courses are optional, and they usually are, three to four times as many boys as girls take these courses. Why do females avoid computers and what will be the cumulative effect of this computer hesitancy?

The dynamics of action theory, a general theory of motivation developed by John Atkinson and David Birch (1984), provides a useful model for explaining why computer anxiety leads to computer avoidance. Computer anxiety is conceptualized as an inhibitory force which dampens or blocks the tendency to work on computers. This inhibitory force is temporary; it wears away in time. But if the computer-anxiety inhibitory force is very strong, the opportunity to learn about computers passes before the negative force has worn off. During registration time, as a woman peruses the schedule of classes, the list of computer classes catches her attention and she begins to consider signing up for one. She imagines herself in the class, listening to the technical explanations (not unlike the last math class she took), and the memory of all the old failures (and possibly public humiliations) come flooding back. She decides to take a literature course instead, and the opportunity to sign up for the computer class is past. The memory of past punishments surrounding similar activities, such as learning math, blocked the intention to learn about computers.

Why Computers?

Perhaps you are asking: If computers arouse so much anxiety and they are so unnatural to women, why should we learn to use them?

I'll take the second part first. Computers may not be based on the way women approach the world. We are not as comfortable with dualistic categories and our world views are not easily squeezed into discrete categories. If the Female System is multidimensional, as Schaef has proposed, then we need computers more than men do. A dualist system is simple; if one ignores all the gray, judgments of black and white are easy. A human mind can easily handle a binary choice. A multidimensional system is complex. Our assumptions, based on our perceptions, are continuous rather than discrete and we consider several dimensions simultaneously. A human mind has much more difficulty handling several continuous dimensions varying simultaneously. The computer can help us by forcing us to be explicit about assumptions and help us track our thought processes to insure consistency. As Professor Turkle has cited in The Second Self, Marvin Minsky has estimated that the interaction of three simple processes occurring simultaneously will result in "ungraspable complexity." If our multidimensional approach to moral, ethical, political, interpersonal issues is to have a chance to prevail, we must marshal the computer to deal with this complexity. And we can force the computer to represent multiple continuous dimensions; it already does as you know if you have performed a multiple regression analysis.

In light of the argument for using the computer to facilitate the Female System, it seems insignificant that we must overcome our anxiety to do it. If we live in a world controlled by computers perpetuating the Male System, we will suffer a greater anxiety. If we consider computers the masterful One, we will be subjugated again.

What are the cumulative consequences of computer hesitancy? They are the frustrations of working with inefficient tools that hamper the creative flow of writing. They are the limitations we feel when we are not conversant in statistical analysis. We may choose to avoid quantitative approaches to research, but we are in a vulnerable position if we forgo the quantitative approach before we have full knowledge of its strengths and weaknesses. But the most important effect of computer hesitancy is the lost opportunity to learn the fundmamentals and to build on those fundamentals until the computer has been turned into a trusted friend that facilitates our consideration of multiple dimensions, context, and paradox. As women, we are finally being listened to. We must marshal all possible tools to make our message effective.

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KEEPING THE COMPUTER NEUTER*

Adeline Naiman

A man called me from northern Canada to tell me he agrees with everything I write in this column. "Do you feel the way I do," he went on, ignoring my vocal paralysis, "about the recent rash of TV advertising? I have five kids--three boys, two girls--and I've brought a couple of computers home, but those guys on television make me want to puke. They play on the helplessness of parents to make us feel we're failing our kids. That's one heavy trip to lay on your average parent."

"Yes," I managed to say.

"Now, my 3½-year-old can handle BASIC beginnings and the usual Logo tricks, and he can practically read already just from fooling around with the computer. I don't think he'll have any trouble in school; but you agree, don't you, that that kind of start isn't for everybody and there's no reason why everybody should want it or feel guilty if they can't provide it?"

"Oh yes. Yes, indeed."

"The 5-year-old is a whiz-ding at games. Oh, I realize they're not educational, but he gets a bang out of them--beats me every time--and it's a damned sight better than the junk they have on television, isn't it?"

"You bet."

"And my biggest boy-he's nine next month--knows his way around the keyboard faster than any kid you ever saw. He's way ahead of everyone at school--they can't keep up with him. I think he'll be an engineer, he's so smart."

"For sure."

"Even my wife's coming round. She used to resent my spending so much time on the computer"

"How about your daughters? Do they play with the computer, too?"

"Huh? Oh, sure. But they're really into other kinds of things--Barbie dolls and some new kind of toy--stuffed ponies with different-colored manes. Besides, I'm not sure the boys would give them a chance, they're so keen. I'm not even convinced girls like computers." He caught himself. "I don't mean you, of course; you're different. . . ."

No, I'm not. I'm just like any other female growing up anywhere at any time. From the beginning, I've been bombarded with obvious and not-so-obvious messages telling me that I'm not male and, therefore, certain things shouldn't interest me. I'm lucky I was oblivious.

*Reprinted with permission from Personal Computing, December 1985, page 37, Copyright 1985, Hayden Publishing Company. When computers came on the home scene just a few years ago, I thought, "Now things will change. Here is this neuter machine that won't have all the intimidating 'male' associations of the past--football, motorcycles, chain saws, calculus. Nor is there a tradition of male ownership of the personal computer. Here's a new field, where little girls can start on equal terms with little boys."

Was I ever wrong! Here we are, maybe eight years into the personal computer, and the latest survey of family use shows the old patterns reasserting themselves: 70 percent of home users are family males; 20 percent of home users are family females; 10 percent don't live in families or won't talk. Moreover, boys spend much more time than girls do programming and playing games, and slightly more time on packaged applications.

In schools, things are only a bit better. There are as many girls as boys in beginning computer literacy courses. In the earliest grades, girls excel in learning to write with the computer. More girls than boys use applications. As they get older, however, the girls fall away, except where an exceptional school makes a point of keeping them involved. Having women computer teachers helps with role models. Perhaps more important is the attitude of the school principal in promoting girls' continued participation in computer activities. The school board and PTA can help.

Some school districts set up special programs--after-school computer clubs just for girls, special study halls, girls' computer labs, software collections that appeal to girls as well as to boys. Some systems lend computers to parents and train them. All this makes good sense. Colleges and jobs already require computer skills for many fields. On several campuses, you get your course assignments and your personal computer on registration day.

It looks as if parents are going to have to exercise some conscious intentions in the home to make sure their daughters are not excluded from the computer culture that will be part of all children's lives as they grow. This means choosing software--including games--that doesn't alienate little girls because of prior associations. Research shows that girls don't like shoot-em-ups and do like adventure games with which they can identify. Violence and competitiveness tend to put them off. Writing stories with word processing tools appeals to them. Their confidence is reinforced when they have time to explore what the computer can do without pressure or oversight or competition from brothers. Above all, family acceptance of girls' ability and right to deal with this technology can ensure that the computer will be a tool for everyone.



PEOPLE

RAPTOR REHABILITATORS ARE IMPORTANT

RUTH MELICHAR begins each day caring for 30 or more wounded and sick birds. She is one of about a dozen raptor rehabilitators in Idaho who receive financial support from the Idaho Department of Fish and Game (IDFG) Nongame Program. Melichar's specialty is owls. She learned her skills from her mother and has perfected them through years of practice.

As Ruth "whoo-whoos" her way from cage to cage, watering, feeding and cleaning, she points out the reasons the birds have ended up in her care.

"These all have been shot and are blind or lame," she waves at five screech owls. "This rare flammulated owl fell from its nest and was brought in by well-meaning people. It would probably have been alright if they had left it alone. Now it has imprinted on me so it cannot survive in the wild." When a bird is brought to her Ruth's concern is getting it ready to be released back into its natural habitat.

While severely injured birds or those that have imprinted on humans will never be able to leave Ruth's care, most have a good chance of returning to the wild, especially if they are properly handled before Ruth gets them. The less they are touched by humans, the better. Besides, raptors have strong talons and beaks and may inflict injury on their would-be benefactors. Over-handling can make the bird's problems worse, too.

Melichar suggests covering the bird with a shirt or towel, wrapping it in the covering and immobilizing it before examining it. If the bird is bleeding, stop the flow with pressure or an absorbant material. "Even putting flour on a wound will help the blood coagulate if you don't have any other method," she says.

It is also necessary to keep the bird warm. The best way is to put it in a dark box and put the box on a heating pad. The box can be used to transport the bird to a Fish and Game office or raptor rehabilitator, too. For smaller birds, a paper bag with a towel in the bottom for the bird to cling to will work. The sooner an expert gets the bird, the better its chances of recovering and being returned to the wild. "That's what we're here for," Ruth says. "We want to get them back where they belong."

....Sheila Robertson Idaho Wildlife (March/April 1986) Reprinted with permission.



Ruth Melichar at work. Photo courtesy Idaho Wildlife

PAULA J. TARNAPOL recently joined the MARNA BUTLER-FASTELAND joined the Society of American Foresters (SAF) College of Forestry, University of national staff as information Minnesota (UM) in March as head of coordinator. In this position, she the Forest Vegetation Management will help consolidate the national office's information-gathering and RICHARD Cooperative, replacing IVERSON. She is stationed at the dissemination functions. She will be college's Cloquet Forestry Center in responsible for maintaining effective Cloquet, Minnesota. Butler-Fasteland relationships with the national media was previously employed as a research and among all units of the Society. forester for Potlatch Corporation in Tarnapol brings a diverse communications background to SAF. Cloquet. She holds bachelor's and master's degrees in forest resources She has worked at The Washington Post from UM. As a forest control and as press attaché in the U.S. specialist Butler-Fasteland Embassy in San Jose, Costa Rica. She 15 responsible for conducting an applied spent the past year traveling and research program aimed at solving freelance writing in Asia. She has important forest weed control also worked as a legislative problems. She also provides assistant in the Maryland House of technical assistance and information Delegates and on several on appropriate and safe vegetation international educational and management practices. cultural exchange programs.

PEOPLE

Gene Detective On Termite Trail

The termite is called the white ant: In Latin *Isoptera* or equal-winged. FRANCES LECHLEITNER has devoted forty years of research to what most folks know them better as: destroyers, devourers of homes and fine furniture.

A bookcase of huge research notebooks stands in her Colorado State University laboratory, and termites fill her insulated cabinet. One wall is decorated by virtually every known species in North America. On another, flight records of the winged types are charted. She knows these creatures, (some individually) and ascribes human characteristics to them. She calls some "aggressive" while others are "cowardly."

Although she's written countless volumes on them, her zeal for termite research remains fervent; spending brief moments with Lechleitner will prepare anyone should they ever want to hold a "termite trivia bowl."

For instance, termites have protozoa in their stomachs, which break down the wood they consume, she'll tell you. She's ready to document for disbelievers that the queen termite in some African species grows to seven inches in length, a half inch in diameter and can live 20 years. Some species of termites are "gardeners" who cultivate fungus gardens.

For those who say termites don't inhabit Colorado because it is too cold and arid, Lechleitner will personally conduct a tour to where thousands and thousands of termites live in the Centennial State.

Like their hated enemies--ants-termites are social insects. They are born into a caste system of workers, reproducers or soldiers. "All termites appear identical when they hatch," Lechleitner explains, "but some unknown genetic and/or environmental factor causes them to become either a worker, reproducer or soldier."



This caste determination is Lechleitner's latest project. Like an unwavering detective, Lechleitner has been searching ten years for this elusive genetic factor, often with the scantiest of clues and little pre-existing evidence.

The site of the investigation into termite genetics is and has been for 10 years the north end of the Horsetooth Reservoir area outside of Fort Collins. The same termite colonies, the same termite site. The termitologist is able to identify the same colony by special termites captured, dyed and then placed back into the colony. "Pinkies," she calls them because of their dyed color, are the stoolies, the plants every good detective needs on the inside. Lechleitner has seen the same termite for five years running. With the assistance of students over the years, she has entered more than 200.000 lines of data in her computer about the genetic research on the termite.

As of yet, the tedious research has not produced the genetic answer she is seeking, and this she readily admits. "Every day I learn something I didn't know the day before."

She points to the societal lessons to be learned from termites: All have to function; all need to be taken care of. Then she mentions something else: In termites, the *Gnathamitermes perplexus* species has an advanced, complex and rigid society, but the flexible, less-structured *Reticulitermes tibialis* lives longer. Is this a societal lesson as well?

>Jerry Smith CSU Alumnus Quarterly

This past fall, CINDY ROBERTSON was the first woman fishery biologist hired as a permanent regional fisheries manager by Idaho Fish and Game. Robertson is finishing writing her Master's thesis in Fish Resources at the University of Idaho.



MARY JO LAVIN has been appointed by the Society of American Foresters (SAF) to head the organization's newly established Human Resources Technical Work Group. Lavin will serve as chairperson of the group for a two-year term. Lavin, deputy supervisor for resource protection and services with the Washington State Department of Natural Resources, is also a member of the SAF Program Planning Committee for 1986 and 1987 national the Lavin said SAF's conferences. decision to create the work group is significant, because it acknowledges human resources as an important technical aspect equal to any other in the industry.

ROGER R. BAY, Director of the USDA Forest Service Pacific Southwest Forest and Range Experiment Station, recently announced the appointment of SUSAN G. CONARD as Project Leader for one of the Station's three chaparral and fire research units.

Conard, who now heads the group of scientists studying Ecology and Fire Effects in Mediterranean Ecosystems, is stationed at the Experiment Station's Forest Fire Laboratory in Riverside, California. Her research unit includes five scientists and a support staff of ten professional, technical, and clerical employees studying the ecology and management of chaparral and oak woodlands which have evolved with prone (and are to) large, catastrophic fires.

HIGH TECH, HIGH SPEED, AND HIGH SCHOLARSHIP

A Cautionary Tale to Modern Educated Women*

Janet Landman

The message "sorry, this will take some time" appears in amber tones on my computer screen at a point in the program when the pace of the processing is less than instantaneous. Despite the apparent innocence of this dispatch about dispatch (or rather its lack), I find the apology disturbing. For to me it reveals a concern with celerity that in this high-tech society begins to border on an obsession. Indeed, in this cybernetic age it is only a slight exaggeration to speak of a "cult of speed"--an over-valuation of speed which amounts to its deification. Of course, the computer revolution has not caused this cult of speed; the causes are elsewhere. But insofar as we think of ourselves as like a computer, I suspect that the cybernetic revolution contributes to this obsession with speed.

Sherry Turkle writes in <u>The Second Self</u> that "the computer is enough like a mind to make analogies between the self and programs seem plausible." If Turkle is right--and I think she is--then it seems plausible that we may tacitly set up cybernetic speed as a standard by which we measure ourselves.

The virtues of a certain amount of speed and efficiency cannot be denied. My attitude toward anything that speeds up the mundane aspects of living--supermarket express lines, fast food establishments, and computerized bank machines--ranges from ambivalence to ardent appreciation. The word processing programs and the statistical programs that help me do my research are my favorite labor-saving devices.

Speed, however, commands a price. Chickens plucked rapidly by machines are two and half times as tough to eat as chickens plucked more slowly by hand. Datsuns, People Express, and Amtrak transport us from one place to another more quickly than our feet ever could, but at the cost of a significant increase in the toxicity of the air we breathe. And it is abundantly evident that this fast-tempo society is producing stressrelated disorders as quickly as it produces labor-saving devices. I believe that a cult of speed promotes a runaway work ethic at the same time as it undermines the quality of work.

In this information society, both information and time are most emphatically economic entities. It is perhaps instructive to look at Silicon Valley in California, which has aptly been called the "Pittsburgh and Detroit of the 21st century," and

*Excerpted from a paper given at a symposium, sponsored by the Center for Continuing Education of Women, on Women's Lives in the Information Society (March 9, 1985). Part of the above appeared in the 1985 Fall issue of <u>Newsletter</u> published by the University of Michigan's (Ann Arbor) Center for Continuing Education of Women. which was described in a recent article as "more like a monastery than a Playboy campus." The computer creators of Silicon Valley appear far more concerned with the efficient use of work time than with enjoying the idyllic California climate; vacations are nonexistent or squeezed in between business trips. According to a Palo Alto personnel worker: "In the East if you ask someone to meet you at 8 a.m. for breakfast, he'll say 'How about 8:30?' Here they say 'How about 7?'" If the work ethic has run amuck in California, I cannot help but wonder what is in store for the rest of the United States.

Truly original thought in any realm demands a certain amount of time which is free from soul-sapping concern with the necessary trivia of living. Such accomplishment may also require a generous fund of what Bertrand Russell approvingly called "useless knowledge" and a "contemplative habit of mind" - things that are hard to come by under the conditions of a cult of speed.

The work of Barbara McClintock, the Nobelprize-winning biologist, is a case in point illustrating the value of a low-tech, slow-track approach to science. As you may know, McClintock has all her life studied maize. Maize is a plant which has at least one unfortunate characteristic with respect to the expeditious execution of research: it reproduces only once a year. In contrast, Drosophilia (the ubiquitous fruit fly) produces a new generation every two weeks. And bacteria reproduce with really impressive dispatch-every 20 minutes. Barbara McClintock studied maize while most other geneticists were studying fruit flies or bacteria. After 30 years of neglect, some scientists are now calling McClintock's discovery of transposable genes in maize a second genetic revolution. Because she had taken the time to "look and think," she had been able to penetrate to one of the profound mysteries of life.

To me all these things--the signs of a runaway work ethic, as well as both the initial isolation and the eventual vindication of Barbara McClintock's scholarly contributions--serve as a cautionary tale to modern educated women. If we hope to make significant contributions to our respective disciplines we must both embrace technological advance and at the same time maintain a certain critical distance from it. This

parable tells me that we should not hang back from learning what any new technology can do for us, but neither should we enshrine technology. Rather than to become either foolish abolitionists or true-believing converts, we do well to forge a critical accommodation with the cybernetic age and with its cult of speed. Out of this sort of critical accommodation, we as individuals and as a society may eventually come to be able to say about our work, "This will take some time"--and to say it without apology.



THE BYTE AND THE BARK:

Women and Computers in Forestry Education

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A telephone survey of students at a large land grant university was conducted to assess computer experiences, perceptions, and wants. This paper reports findings of the survey which were assembled to answer the question: are women in forestry receiving the same education in computers as other students? Our underlying assumption is that knowledge of computers is becoming a prerequisite for many professional jobs and that a lack of computer background will soon be a new form of illiteracy. Obviously, not everyone would agree with this assumption, but it is nevertheless reasonable to ask whether women in forestry--or any other field--are getting the educational exposures that can be expected to be important for career growth in the future.

Women and Computers: What Does the Literature Show?

Most of the research bearing on the question of women and computers does not examine a generalized sample of university students. Still, even studies of students who have taken advanced mathematics courses suggest some gender differences in approaches to computers.

Researchers have hypothesized two major barriers to a constructive approach to computers: past exposure to computers and negative attitudes toward computers (Griswold 1985). These are thought to be related in that students who are exposed to computers tend to have more positive attitudes toward them and to express less "computer anxiety." Studies have generally found sex differences in perceptions of computers to be quite small (De Blassio and Bell 1981; Hannafin and Cole 1983; Loyd and Gressard 1985). Among both sexes, skill with computers tends to be perceived as requiring a mathematics or science background (Hannafin and Cole 1983).

The research literature does consistently show that women are less exposed to computers. Computer clubs and independent programming projects appear to revolve around males or male cliques, and indeed computer competence is more likely to enhance the status of a male student than a female student (De Blassio and Bell 1981). This may explain the fact that youngsters' computer camps have a largely male clientele (Project on Equal Education Rights 1984) and that programming courses in a large number of school districts around the U.S. have been found to enroll about twice as many males as females (Project on Equal Education Rights 1984). In sum, past research suggests that female students are exposed to fewer opportunities to learn about computers, and that images of computers rather than positive or negative attitudes may deter females from learning about computers.

Methods and Data

In March 1985, 42 student interviewers contacted 411 students enrolled in a large university and interviewed them over the telephone. The initial sample size was 420. Telephone numbers were randomly generated by page location in the current university telephone directory. About 30% of the numbers did not yield an answer or were no longer in service. These numbers were replaced by additional ones. Answered numbers resulted in almost 100% response and cooperation.

Students were asked a variety of questions about their experiences with computers and about their own backgrounds. A total of 29 students majoring in the College of Agriculture and Forestry appeared in the sample. There were too few students in forestry alone to consider them separately. Even so, the number of women agriculture and forestry majors in the sample is very small. Results of this study should, therefore, be considered exploratory.

The Findings

We asked respondents how many courses they had taken that required the use of a computer. Throughout the university, women had taken fewer courses, even when we adjusted for student's year in school and major (Trent and Pratt 1985). Results for women in Ag/Forestry (Figure 1) were similar, except that within the School of Agriculture and Forestry, the sex differential was smaller than in other majors. Males in Ag/Forestry had taken only about half as many computer-based courses as men in other majors, and their female counterparts, while less exposed to computer courses, were less disadvantaged in their major than were women in most majors.





As a rough indicator of knowledge of computers we asked students to identify the terms behind the acronyms RAM (random access memory), I/O (input/output), and DOS (disk operating system). This test was developed to assess knowledge of microcomputers in particular. Again we found Ag/Forestry males behind males in other majors (Figure 2). Ag/Forestry women were similar to other women in the university, who averaged about one-third of one item correct. Still, Ag/Forestry men, with their low level of knowledge, scored twice as high as Ag/Forestry women.



Figure 2. Correct Answers to a Three-Question Computer Knowledge Test by Sex and Major at a Large Land Grant University, 1985.

To learn something about how Ag/Forestry women and men think about computers and their importance in education we looked at their answers to the perception questions (Table 1).

Table 1. Perceptions of Computers and Computer Education by Sex and Major at a Large Land Grant University, 1985.

		Ag/Forestry		Other Majors	
Ite	m	M (N=21)	F (N=7)	M (N=177)	F (N=196)
1.	Necessary for successful career	76%	54%	61%	52%
2.	Future belongs to comp. literate	57%	29%	66%	56%
3.	Feel comfortable with computers	38%	71%	67%	448
4.	Personal desire to learn computing	91%	718	89%	76%
5.	Will have adequate preparation	35%	0%	45%	22%

Items 1 and 2 were designed to measure how important students think computers are as a prerequisite for future career success. If anything, Ag/Forestry majors attach slightly more importance to computer knowledge for career success than do students in other majors, but women attach less importance to computers than do men. As to whether the future belongs to those who know something about computers, Ag/Forestry majors, especially women, tend not to hold this view in comparison to students in other majors. Of course "other majors" covers everything from electrical engineering to English literature, but it is still interesting that women in Ag/Forestry did not tend to see computers as the wave of the future.

Items 3 and 4 were included to find out to what extent students suffered any of the "computer anxiety" that has often been attributed to women. As to whether students feel comfortable with computers (Item 3), Ag/Forestry women scored higher than Ag/Forestry men and almost twice as high as women in other majors. Whatever these figures imply for other groups, at least they make clear that Ag/Forestry women do not suffer trepidation toward computers. Why only 38% of the Ag/Forestry men feel comfortable with computers is not clear.

Item 5 in Table 1 is probably the most important perception that can be measured when looking at students and computers in higher education. If students do not feel their computer education is adequate, they feel to that degree unprepared to compete for professional roles. Interestingly, not one of the Ag/Forestry women believed she was getting adequate preparation. This figure has to be interpreted in light of the fact that most students at this particular university felt the same way, and one certainly cannot generalize these results to universities that have gone farther in computerizing relevant portions of their curricula. Still the fact remains that no Ag/Forestry woman in our sample felt she was getting enough exposure to computers, whereas one of three men in Ag/Forestry did feel this way.

Conclusions

As John Hendee said recently (1985) in these pages, "forestry has evolved from a pretty straightforward operation . . . to a highly complicated enterprise." Forestry, like every field with a strong technical emphasis, is increasingly becoming a "highly computerized enterprise" as well. It is hard to believe that future foresters will be fully prepared unless they have had at least some exposure to computer applications relevant to their field. In that light, the findings of our research suggest that the Ag/Forestry female respondents are running at a handicap; if this limited sample is representative of other institutions, then women in general are being handicapped.

Ag/Forestry women in this sample had less exposure to computers, knew less about them, yet had a strong desire to learn more about them. According to the two questions asked, they were somewhat ambivalent about the importance of computers. The willingness to use computers is certainly there, but exposure and knowledge among Ag/Forestry women appeared to be low. Because the number of Ag/Forestry women in this sample was very small, results have to be regarded as tentative.

Even these tentative results, however, point to future survey studies that can pinpoint the problems of women who are being trained to become foresters. Larger samples of forestry students at a variety of universities are necessary to determine precisely whether women in the field in general are getting less than adequate training in the use of computers. Furthermore, data need to be gathered to see what kind of barriers women in forestry face. Among women in general, computer anxiety and identification of computers with traditionally "male" fields like math and physics seems to be a barrier, but it may not be among the special breed of women who have elected to enter forestry. On the other hand, there may be subtle tracking with forestry curricula that works to

the disadvantage of women. Sometimes greater awareness on the part of students and advisors can help counter unintentional tracking of women into the "soft"--and usually well less paid--subareas of a discipline and profession. If it is generally true, as it was in this survey, that women in the field do not feel they are getting adequate computer background, then we can be sure that more than mere personal preference for non-computer based courses is operating. Broader documentation of the extent of the problem and the specific women forestry barrier students face ought to be high on the agenda for future research.



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Roger Trent is associate professor of sociology at West Virginia University, where one of his main educational interests has been greater student access to computers. His research interests include gender differences, health care delivery, occupational safety and health, and environmentalism.

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MINIS, MICROS, AND THE DATA GENERAL:

A Washington Office Viewpoint

William Damon predicts a computer on every desk.



WIF: Describe your current job.

DAMON: I am a member of the Software Management Group of the Computer Science and Telecommunications Staff in the Washington Office of the Forest Service. The Forest Service is installing a comprehensive network of minicomputers at all our line officer locations (including Ranger District offices).

WIF: How will the minicomputers be used?

DAMON: They are being used very heavily now for a variety of both office automation tasks (word processing, electronic mail, electronic filing) and for what was in the past traditionally referred to as data processing activities (data entry, data base management, data analysis). The Forest Service currently has about 650 of these systems installed service-wide and will be implementing another 100 or so sites in the next year. All of these systems are linked together through a nationwide telecommunications network. By October of 1987, all of the Forest Service offices will be part of what will be one of the country's most extensive electronic mail and data communications networks.

WIF: What are the responsibilities of the Software Management Group?

DAMON: Our responsibilities include the management of the Forest Service Software Distribution Process throughout the 650 sites in the Forest Service that now have minicomputers at their local offices. We also conduct reviews of nationallydistributed computer systems to insure that those systems meet nationwide standards. Finally, we are responsible for the development and implementation of a Forest Service Software Information Exchange Service that will be used by all our people to share information about computer software that has been Forest developed all over the Service.

WIF: What triggered your interest in working with and around computers?

DAMON: I graduated with a Master's Degree in Forest Resources. My thesis was built around a computer model of a skidder designed for operations in small-diameter timber stands that are typically described as "pre-commercial thinning operations." The Forest Service in Alaska hired me as a Forester/ Operations Research Analyst, and my first job with the Forest Service was to design and program a computer system that could help in the analysis of data for the Tongass National Forest Land Management Plan. I picked up the computer programming skills I needed on the job (with some assistance from my wife, who was a computer programmer/analyst working for the Alaska state government).

WIF: Obviously, you must like working with computers -- but can't it be boring at times?

DAMON: The most interesting--and the most fun--part of the job is helping our professional and technical staff people learn how to use the computer and do their jobs more efficiently. Like any government agency, we are inundated with paperwork, and anything we can do with the computer to minimize that paperwork load frees up our professional and technical people to do the jobs they are really supposed to be doing: managing the National Forests.

WIF: In your efforts to assist field units, what changes in attitude, if any, have you observed within the Forest Service as far as the use of computers is concerned? DAMON: I have been very pleased with the way our professional and technical staffs have responded to a rather dramatic change in our methods of doing business. A wildlife biologist on a national forest told me that she considered the Forest Service-distributed processing project the best thing the Forest Service has done in years. It enabled her to do a large part of her job much easier and faster.

WIF: Are the computers beneficial as far as helping personnel with their reading and writing?

DAMON: Yes, many of our professionals have to do a lot of writing as part of their jobs; the computer systems enable them to do that work much more quickly and more accurately. We recently distributed an electronic spelling checker, which many of our professionals dearly love! In addition, the electronic mail features allow them to share their work with other professionals in other Forest Service offices quickly and easily.

WIF: What sort of response have you gotten from field locations?

DAMON: The response, particularly in the Ranger District offices, has generally been superb. The computer systems offered them an opportunity to greatly reduce the amount of time they had to spend on boring, repetitive tasks, such as balancing large, complicated, manual spreadsheets. They also reaped great benefits from the office automation side of the computer systems, especially since even the most rudimentary word processors had not yet reached any of our district offices.

WIF: What about job promotion opportunities in the computer series within the Forest Service?

DAMON: The computer system field is an excellent career path. In the computer series, employees may substitute work experience education in order to meet requirements to move into for the the professional computer series. For example, a woman who started working for the Forest Service as a mail clerk in 1974 (her first job out of high school) was able to learn enough computer skills on the the job to eventually move into the professional computer series, and in 1981 she was promoted to forest computer specialist. Another woman who had served in a variety of clerical jobs

was able to accomplish the same thing. The key point is that the opportunities are there for people who do not have college degrees in computer sciences; however, it takes a lot of hard work and study to make such a significant career move. The women mentioned above were both very good organizers and managers; they picked up the technical skills they needed along the way.

WIF: How would one go about moving from a clerical job to a computer-oriented position?

DAMON: I do not want anyone to underestimate the amount of hard work it takes or number of years to build up enough on-the-job experience to make that kind of transition. One thing that really helps, though, is a willingness to attend college classes that help establish the technical skills needed. One of the people who worked for me on a national forest was able to take advantage of local college courses to pick up those technical skills; what she learned in those courses helped her. As in any field, the single most important attribute is attitude: if an employee is willing to work hard and understands that our job is to help our people learn to use the computers effectively, that kind of attitude shows through in all that they do.

WIF: Do you work mainly with the Data General system?

DAMON: Yes, most of my work is with the Data General systems, but I do work with other systems as well. All of the Forest Service financial management, payroll, personnel, and property management information is kept on an IBM at the Department of Agriculture's National Finance Center in New Orleans. We still need to work out improved communications between our Data General systems and that IBM mainframe.

WIF: Is the Data General system being used as it was envisioned at its inception or is it basically a word processing tool?

DAMON: In general, I think the Data General systems are being used pretty much as the Chief of the Forest Service intended them to be used. There is a heavy work load in office automation (word processing, electronic mail), but one has to remember that those kinds of activities make up very substantial parts of all our jobs in the Forest Service. The office automation packages we use include a number of features beyond pure word processing. Electronic spreadsheets, small data base maintenance, and business graph-



ics (pie charts, bar charts) are all included in the office automation package.

WIF: Do you have any suggestions for improving the Data General system?

DAMON: We need to concentrate on the systems for natural resource management. During the early years distributed processing of the project, there was a heavy emphasis automating a number of on and administrative business management functions. Many of those administrative functions were eating us up, keeping our professionals in their offices when they should have been in the field. Now, though, we need to do a better job figuring out ways to use the systems to help in resource management in a more direct sense. For example, one thing we tried which worked very well in North Carolina was to automate the timber inventory system on the Data General For the first time, systems. district employees could enter their timber data locally and get a report back in minutes from their own This made the district system. people much more interested in keeping their timber data base updated, because now it could be a real working tool for them. We need to do much more of that kind of thing in the future.

WIF: Are you involved with micro computers?

DAMON: I am much less involved with microcomputers now than I was before the Data General systems came along. We used microcomputers heavily on the national forest in North Carolina, but they are not used much at all anymore. The problem with the microcomputer technology is that sooner or later you need to share your work with someone else, usually in an other office, and there is no good way to do that in today's microcomputer world. In addition, we often have need for more than one person to access a data base, and once again, there is no good way to do that. All of the major microcomputer vendors are spending a lot of time and money developing networks to allow better linkages, but the technology is really not there in a practical sense yet.

WIF: Do you feel there is a trend away from using mainframe computers and toward use of personal computers? What are the pros and cons of such a scenario? DAMON: The trends are obviously away from big mainframe systems except in a few special cases where nothing else will do the job. The trends, at least in the business/government world, is towards personal computers exclusively. If you take a view of your data that centers around the concept of corporate information available to all the people in your organization who need it, that view does not blend well with a personal

William E. Damon, Jr. grew up in Big Stone Gap, Virginia. After attending the U.S. Military Academy, West Point, New York he served in West Germany and Vietnam. In 1977, he obtained his M.S. degree in Forest Resources from the University of Idaho.

Damon has worked for the Forest Service in Alaska, North Carolina, and Washington, D.C. His major tasks include the Tongass National Forest Land Management Plan, the Nezperce National Forest Land Management Plan, and implementation of the Data General computer systems network on national forests in North Carolina. Since 1985 he has been on the Forest Service's Washington Office Computer Science and Staff--Software Telecommunication Management Group.

computer environment. A number of other federal agencies have expressed a lot of interest in what the Forest Service did with the Data General systems for that very reason. My own view is that there will be a mix in the future that includes heavy use of minicomputer systems such as the Forest Service Data General network along with heavy use of microcomputers in places where their use makes sense.

WIF: What is the future of microcomputers then? You sound rather neutral about a tool which others find very useful.

DAMON: I think that in the future we will use microcomputers more than we do now. Used properly, they have a role to play in any modern network. The keys are better connectivity between them and a very clear definition of just what their role is in your information management environment. What needs to be avoided is having a lot of the data needed for your organization's daily work tied up on a bunch of floppy disks that only a single individual or group of individuals understand (or even has access to, for that matter).

WIF: How do you keep abreast of the constant emergence of new products?

DAMON: I usually try to read a couple of trade journals a week. There are dozens of trade journals floating around, and no one can read all of them. So I settled on a couple that have been around for awhile and I glance through them as often as I can.

WIF: Can you recommend any publications that would help non-computer specialists keep in touch with the computer scene?

DAMON: That one is a little tougher. Most of the publications I read are written by computer folks for computer folks. People who have a personal computer at home generally find that a publication aimed at owners of their particular brand of microcomputer are helpful.

WIF: Do some futuring for our readers and relate some of the gee-whiz possibilities that might come to pass in the next ten years.

DAMON: It takes luck over skill any day to predict the future in computer use. But four scenarios might be:

- From the natural resources area, I think that the field notebooks are going to disappear. Everyone in the field who has to take notes, take inventories, record observations, whatever, will do so on electronic notebooks. In some instances, they will fill up their electronic notebook and take it back to their office and plug it into a computer. In some instances, the electronic notebook will talk to a satellite which will gather up the information and instantly move it to a computer somewhere.
- All of our resource inventories will be maintained on geographical information systems that produce maps and map overlays at the touch of a button. Tabular inventories will disappear from our offices.

- Remote sensing devices will be used more and more frequently for a variety of monitoring tasks. We already use those techniques heavily in wildlife management and research; we will use them much more in the future.
- In the office, every employee will have a computer terminal on the desk. They will use that computer terminal for most of their mail (as I do now); they may even be able to talk to their family at home just like they can on the telephone now. They will have a set of generic software tools available to them that allows them to create their own data bases without needing any help from computer types (already the forest computer specialist is a manager/ trainer person and does little system design and programming. That will change even more radi-

cally in the future.) Forest Service employees will use computers so much that they won't even think of it as using a computer. It will be just one of many tools they use to get the job done.

WIF: Has electronic communication become second nature to you?

DAMON: Yes! a couple of weeks ago two forest computer specialists were coming to Washington D.C. to work on a detail. I had invited them over to our house for dinner the night before their detail was to begin. At the last minute, their departure was delayed and they needed to let me know they would be late, both for dinner that night and for the detail the next day. They sent me an electronic message, and as soon as I saw it, I knew I needed to let my wife know about the change in plans.

Without thinking, I automatically tried to forward their message to my wife by just hitting a key on the computer. Only when the computer asked me to whom should it forward the message did it dawn on me that the family was not hooked into this electronic world. Only then did I realize I would have to revert to ancient technology and pick up a telephone!

Electronic communications had already become so routine for me that I just assumed that the whole world was at my fingertips. That, in a nutshell, is where I think we are headed -- to an environment where we will use these machines for the things they are good at without even thinking about the fact that we are using machines. When they are natural tools, we will have come a long way.

Name	Phone			
Address				
Position or title (if student,name ma	ajor)			
Organization (if student, name scho	ol)			
Amount enclosed (check one)	□ \$15/non-student	□ \$10.00/student		
□ \$30.00 gov't. agencies/libraries/fo	reign subscription			
Make check payable to WOMEN IN	FORESTRY			
Return this form with payment to:	WOMEN IN FORESTRY Laboratory of Anthropo University of Idaho Moscow, Idaho 83843	, logy		



WHAT <u>YOUR BOSS</u> WANTS YOU TO KNOW*

Twenty Things You are Expected to Know That Your Manager Probably Will Never Take The Time or Trouble to Explain.

Shirley Sloan Fader

t's your first week on the job, and you are inundated with new names, faces, and responsibilities. The most important of these names and faces belongs to your boss, and your most important responsibility is to please him or her.

The problem is that your boss, like most human beings, won't always spell out precisely what is expected from you. It's up to you to determine this. At a time when you're still learning your official duties, and even when you've settled in, it can be a tricky task trying to figure out the list of tacit do's and don'ts.

Well here it is, spelled out: 20 things your boss expects you to know but will probably never take the time or trouble to tell you. Of course, all bosses have their pet peeves and individual way of doing things. These can be learned in time by watching and probing. For those first hectic weeks, however, this list will ensure that you start off on the right foot and stay there as you settle in.

Here's the list. Memorize it. Apply it.

1. DON'T MAKE EXCUSES. With rare exceptions, such as life and death crises, no boss hears or cares why something wasn't done. Get the job done and do it on time.



2. DON'T AIM FOR PERFECTION. Getting the job done is more important than doing it perfectly, which can count against you if it interferes with your share of the work load. This does not mean you can be careless or sloppy.

3. DO MORE THAN IS EXPECTED. Doing only what is expected and no more puts you among the mass of expendable workers. Take the initiative and follow up on your last job. Bosses value people who do their work and look for more.



*Reprinted from the October 1985 issue of <u>Business</u> <u>Week's Guide To Careers</u> by special permission @ by McGraw-Hill, Inc.

4. ANTICIPATE PROBLEMS. Ask yourself what could go wrong. When your responsibilities depend on assistance from others, make sure they know and understand what you're requesting. If the other person doesn't follow through, you look inept with your explanation about John having promised to take care of it. Make sure that you check up on whether the work has been done. Remember that foul-ups, and unforseeable failures by others, are a routine part of work life.



⁽¹⁾ 5. HANDLE PROBLEMS YOURSELF. Solve whatever problems you can and try to anticipate problems before they happen. If you lack the authority to handle the situation, come prepared with suggested solutions when you broach the problem. Even though the boss may dismiss your solutions and use others, you'll gain a reputation as a problem-solver.



6. BE PUNCTUAL. No amount of staying late makes up for your not being available when other people need help with their work. Habitual lateness may result in your losing your job.

 TAKE BEING AT WORK SERIOUSLY. People quickly become aware of who makes an effort to be in regularly and who uses any excuse to take a day off.

 DON'T BE A SQUEAKY WHEEL. As a daily work style, this approach is self-defeating. Don't be seen as "here comes a problem," or "here comes a complaint."

9. CHOOSE YOUR BATTLES CAREFULLY. In deciding when to fight and when not to fight, here are questions to ask yourself: How much difference does this problem really make in my job life? Is it permanent or transitory? Is it worth possibly making an enemy or enemies? And, most importantly, is there a realistic chance of winning? Don't be among the people who fling themselves into no-win job battles. Ask yourself the questions above before doing something foolish.

10. DON'T HOLD A GRUDGE. You can't win them all. No one can. Even Babe Ruth, Joe DiMaggio, and Hank Aaron didn't get hits about 65% of the time. Expect to lose sometimes and you won't squander your energy, the good will of your allies, and the patience of your boss by vill of your allies, into a personal crusade.



11. DEAL WITH THE DECISION-MAKERS. This is the best way to get action. Dealing with people with less authority is usually a waste of time and effort. Your most elaborate and impressive presentation often gets passed on to the real power in a watered-down version such as "Mark thinks we ought to change this procedure."

UNDERSTAND BOSS LANGUAGE. "If it's 12. not too much trouble" means "Do it . . . and the sooner the better." "If I may make a small suggestion . . . " means "Do it this way." "I don't want to rush you," means "Hurry up."

LEARN WHAT OTHERS ARE DOING. This is 13 an essential often forgotten. People 3 get caught up doing their individual tasks and forget the big company picture. The course of your career can be altered by keeping the overall picture in mind. What were last year's triumphs and failures for the organization? What is being planned? What are the organization's major goals and fears? How does your job relate with all that is going on? Learn these things and you'll know how and when to press for your goals.



GET ALONG WITH CO-WORKERS. No boss in interested in who is "right" in a co-worker squabble; all he or she knows is that internal battles mean less production. To your boss, when you're involved, you're automatically wrong. For this reason, be willing to make concessions for the sake of maintaining the peace. This means sometimes letting others do it their way, even if you know your way is better and you can prove it.

BE DISCREET. Never discuss organization 15. business and people in detail or by name in public places where strangers can overhear. Even in private, be discreet with outsiders about organization politics, problems, and business.



16. DEVELOP A SENSE OF TIMING. Have the patience to wait for an appropriate occasion or situation. Many factors--the boss's mood, the success of your last project, the company's latest quarterly earnings report--can make the difference between a yes and a no, a promotion and a dismissal.

17. DON'T LIE. Nothing is so serious that lying won't make it worse. If you're caught in a lie, you lose your credibility, which can be harmful to your career.

18. READ INDUSTRY PUBLICATIONS. It's important to know what is going on in your industry, and trade publications will help keep you informed. This exercise will also demonstrate you are interested in your job, your company, and the importance of professional trade news.



19. GET TO KNOW YOUR PEERS. Join and be active in one or more professional and trade organizations. Contacts you make and information you glean will aid you on a personal level whenever you change jobs--while improving your status with your current boss.



20. MAKE NO ASSUMPTIONS. When you find yourself thinking or saying, "I never expected such behavior from her/him," or conversely, "I'm so disappointed. I was sure they would do it this way . . . " you know you've made the mistake of projecting your outlook concerning others' behavior. That's a narrow, problem-generating attitude that irritates bosses.

In the end, it all comes down to the fact that just being good enough rarely is good enough today. Once upon a time, perhaps it was; the post-World War II baby boom during which you were born has changed all that. Not only is there now an immense group of people in their 20s and 30s, but unprecedented national affluence has made career training and college dearees commonplace.

As a result of this enormous pool of skilled workers, career competition is fierce, not only for baby boomers but for everyone at every age. Under these competitive work place conditions good enough will never succeed. Understanding how to satisfy your superiors by doing things without their having to ask will help propel you above the status of just another expendable worker. By following these guidelines, you will be showing awareness and initiative that, if sustained, will surely be noticed.

Shirley Sloan Fader is a job/career specialist who writes and consults on workplace problems



Lindsay Van Gelder Takes You Shopping For Computer Goodies*

One of the hottest computer trends around is what's known as "desktop publishing"--using your computer not only to process words but to produce newsletters, fliers, and other copy you used to have to take to the printer. The best of all possible tools for desktop publishing is the Apple Laser Writer printer, but at up to \$6,000, it's out of reach for most of us. Luckily, there are now a number of software programs that let you use more affordable hardware.

For instance, take Lettrix, a \$98.50 program that turns my \$369 Epson dot matrix printer into a dazzling virtuoso. When you use Lettrix with your regular word-processing software, you can print in any of 20 different typfaces--including near-letterquality Prestige and Gothic, Old English, Art Deco, even Greek, Russian, and Hebrew. Typefaces can Russian, and Hebrew. Typefaces can be mixed on the same line of text, and you can even design and reuse your own. Lettrix works with an IBM PC or compatible, and most models of Epson, Okidata, Star Micronics, Panasonic, Citizen, C. Itoh, AT&T, and IBM printers. Write : Hammerlab Corp., 938 Chapel Street, New Haven, Connecticut 06510.

Print Shop (\$49.95, for Apple II, IBM, Commodore 64, plus most leading dot matrix printers) lets you easily make greeting cards (including the kind that folds into quarters;

THE SEVENTH CONTINENT: ANTARCTICA IN <u>A RESOURCE AGE</u> was written by Deborah Shapley (\$35.00, Resources for the Future). What and who will determine the future of Antarctica--the Earth's seventh and only unspoiled continent? Shapley takes readers on a sweeping expedition of Antarctica's legacy: through the age of exploration, the age of science, and into the current resource age. The authoritative text presents a thorough analysis of historic, legal, technical, and political factors that will affect the destiny of Antarctica and offers fresh analyses of the issues relevant the program prints part of your prefolded card upside down), gigantic banners, stationary, signs, even iron-on T-shirt decals. You choose from a predrawn set of some 120 graphics (everything from champagne to skull and crossbones), plus 12 type fonts and 16 border designs. Write: Broderbund Software, 17 Paul Drive, San Rafael, California 94903. If you want to put out a professional-looking newsletter, The Newsroom (\$59.95, for Apple, IBM, Commodore 64) does mastheads, columns, headlines, and captions. Write: Springboard Software, 7808 Creekridge Circle, Minneapolis, Minnesota 55435.

My favorite word-processing program, SSI's WordPerfect, has a new edition out (Version 4.1), which does everything but scrub your kitchen floor. It has an on-line 150,000-word thesaurus, spellingchecker, word-counter, newspaper columns, a utility that lets you set your printer up as a typewriter (great for envelopes), the ability to store up to the last three things you've deleted, a program to convert old WordStar, MultiMate, and other files into WordPerfect format, and more. It costs \$495 (or less from discounters) and works on IBM PCs and compatibles with 256K. SSI has also recently introduced a 128K Apple II version of WordPerfect for \$179. Write: SSI, 288 W. Center Street, Orem, Utah 84057.

* (Ms Magazine, July 1986)

to the U.S. role there, heretofore little known to American readers. Its resource potential as seen by experts and interested countries, and the ecological consequences of resource activities in Antarctica's oceans, on its continental shelves, and on the continent itself are discussed. Shapley concludes by recommending actions necessary to prevent Antarctica from becoming the lost frontier.

The text is enhanced by an elegant design that features 36 black-and-white photos and 33 maps and charts. To order, write Resources for the Future Customer Services, P.O. Box 4852, Hampden Station, Baltimore, Maryland 21211.

<u>TIMBER</u>, a software package designed for managing forest properties, allows a timber owner to evaluate complex management conditions quickly and accurately. The program simulates the changing conditions of the forest, the markets, and the financial community. TIMBER is designed for the forest manager serious about managing woodlands.

Five data sets are used to simulate forest conditions and graphically display them for the user to evaluate. The main menu allows the user to supply the basic inventory, yield tables, rotation periods, management policies, and financial assumptions about changing conditions then plug the changes into the financial, growth, or marketing variables of the program and watch it simulate the results on graphs and tables.

<u>TIMBER</u> costs \$2,000. The manual is relatively easy to use. The copy-protected software is designed for IBM personal computers, so please confirm its compatability with your hardware before purchasing. Write: <u>TIMBER</u>, Athena Associates, P.O. Box 157, Duxbury, Massachuetts 02331.



Plans are currently being made for the distribution of <u>GREAT AMERICAN</u> <u>WOODLOTS</u>, a public broadcasting series on the management of forestland. Produced by Maine Public Broadcasting Network and hosted by Extension Forester Bud Blumenstock, the series will be made available free to public broadcasting stations around the nation sometime this fall. The series features profiles of several outstanding Tree Farmers, including the 1984 National Outstanding Tree Farmers, Richard and Ruth Heck, and the 1984 New England Outstanding Tree Farmers, Les and Ann Barden. Call or write your radio programming manager and express your Network, 65 Texas Avenue, Bangor, Maine 04401 (207-941-1010), will respond.

PLEASE NOTE THAT THE PHOTO CONTEST DEADLINE HAS BEEN EXTENDED TO DECEMBER 1ST. SEE PAGE 48 FOR ENTRY. WOMEN'S WAGES: ESSENTIAL TO PRESERVING MIDDLE INCOME JOBS, written by Oberlin professor Karen Brodkin Sacks, was released by the National Organization for Women and the Communications Workers of America. "The typical job the U.S. economy is creating can be characterized as non-union service sector jobs occupied by women with low pay. How can America preserve and expand the middle class standard of living when the jobs and associated wages it is creating are typically low paid?" asks the study.

Rep. Pat Schroeder, D-Colo., co-chairwoman of the Congressional Caucus on Women's Issues, said the study exposed a distressing trend that raises major policy questions. To order write: NOW, 1776 K Street NW #900, Washington, D.C. 20006.

<u>WOMEN OF THE RURAL SOUTH</u> is a well-researched study of the economic status of rural women. The report specifically explores the economic lives of rural working class women in North Carolina, South Carolina and West Virginia.

The most important points in the report focus on the theme that the combined power of class, race, and gender is fundamental in determining the economics of rural working class women in all three states. Copies of the report are available from: Southeast Women's Employment Coalition, 382 Longview Drive, Lexington, Kentucky 40503.

How many "new men" are there? "I would guess that only 5 to 10 percent of men come close," said Anthony Astrachan, judging from his extrapolations from public-opinion polls, marketing surveys and the interviews he did for his new book, HOW MEN FEEL: THEIR RESPONSE TO WOMEN'S DEMANDS FOR EQUALITY AND POWER (Anchor Press-Doubleday, \$19.95).

"The 'new man' does exist, but he's nowhere near as prevalent as the media hype has made him out to be," said Astrachan, who interviewed nearly 400 men and women over a nine-year period to produce his 440-page book, an overview of the state of men's reactions to recent decades of change in women's roles.

The book surveys male responses to the increasing numbers of women in the armed services, in blue-collar and service jobs and in management and professional occupations. It also examines changing family roles and the budding men's movement.

FROM STUMP TO SHIP is a half-hour film on lumbering in Maine in the 1930s. Maine lumberman Alfred Ames originally shot the film in the 1930s, and it was recently restored and reassembled by a team of historians, filmmakers, and folklorists. For further information on the film, which is accompanied by a viewers' guide on the forest economy and history of Maine, contact the Department of Public Information and Central Services, University of Maine at Orono, PICS Building, Orono, Maine 04469-0150.

<u>WOMEN IN CHARGE, DILEMMAS OF</u> <u>WOMEN IN AUTHORITY</u> by Aileen Jacobson describes some of the problems women managers face and practical solutions that have worked for over 35 women interviewed. Offering a realistic picture of the obstacles women may encounter as managers, the book gives suggestions on how to deal with issues ranging from sexual harassment to flexible career plans that allow for a family life. The book is available for \$18.95 from Ban Nostrand Reinhold Company, 135 West 50th St., New York 10020.

The Project on the Status and Education of Women has published a <u>GUIDE TO NONSEXIST LANGUAGE</u> which offers numerous ways to write clearly and fairly. For example, instead of "Everyone needs his space," use "All people need their own space." Not only does the GUIDE discuss pronouns, but it also lists preferred sex-neutral titles (e.g. "photographer" instead of "camerman",

"drafter" rather than "draftsmen"). The four-page GUIDE also contains a selected list of resources and was adapted from <u>GUIDE TO</u> <u>NONSEXIST LANGUAGE AND VISUALS</u> which was developed by the University of Wisconsin-Extension Equal Opportunities Program Office and Department of Agriculture Journalism. Individual copies can be had for\$2 (prepaid) from PSEW, Association of American Colleges, 1818 R Street, N.W., Washington, D.C. 20009. Bulk rates are available.

The Tennessee Valley Authority has announced publication of a new journal, FORUM FOR APPLIED RESEARCH AND PUBLIC POLICY. According to the editor, Alanson Van Fleet, it is being published "to help focus attention and stimulate discussion on policy issues related to energy, economic development, and the wise use of natural resources." The journal will carry articles on policy-related research from the nation's universities, research centers, private companies, and public offices, Van Fleet said. Manuscripts will be reviewed by an independent panel prior to acceptance for publication. Subscriptions to the FORUM are \$20 per year. Write: P.O. Box 1750, Knoxville, Tennessee 37901-1750.

On March 24, 1986, The Wall Street Journal produced a 27-page special report on <u>THE CORPORATE</u> <u>WOMAN</u>. Within these pages were 20 separate features under various topics such as career, attitudes, and the workplace. Content ranged from two career marriages, fighting barriers, pink-collar ghettos, all-male enclaves, to changing office etiquette. The following represents a sample of statements contained within the report: Recent research indicates that women bosses don't manage any differently from men, and that women are more committed to their careers than men are. Women are more likely than men to relocate for promotions and, in conflicts between important home and business responsibilities, more likely to favor their jobs. Self-employed women are now increasing five times faster than self-employed men. Today, women fill nearly a third of all management positions but most are stuck in jobs with little authority and relatively low pay. Men's track records come with them but women repeatedly have to prove their competence. Reprints of this special report can be obtained by mailing a check for \$2 per copy to Special Publications Department, Dow Jones & Company, Inc., 200 Burnett Road, Chicopee, Massachusetts 01021.



COMPUTER PROGRAMS AID PALLET MANUFACTURERS

Diane Sullenberger and Walt Wallin Northeastern Forest Experiment Station USDA Forest Service Broomall, Pennsylvania

oday, the pallet industry alone consumes about 50 percent of the total production of hardwood iumber and about 8 percent of the coniferous lumber production. In order to contribute to the overall resource supply, Forest Service scientists are searching for ways to improve the efficiency of wood use in pallet manufacturing.

The pallet is a platform device used as a base to assemble, store, handle, and transport materials in a unit load. Pallet designs vary greatly to accommodate the wide range of pallet functions but basically, pallets consist of one or two decks supported by stringers or stringer boards and blocks. In 1983, 258 million pallets were produced and, currently, about 95 percent are constructed of lumber or plywood.

Since the pallet industry relies heavily on natural wood resources, Forest Service scientists from the Northeastern Forest Experiment Station's Forestry Sciences Laboratory in Princeton, West Virginia, have conducted studies to develop information that allows the nation's wood supply to be used more efficiently and effectively.

In 1976, the Forest Service developed computerized design procedures to estimate the strength, stiffness, and durability of wooden pallets. These programs were released to pallet manufacturers on a trial basis to test program utility. In 1980, a cooperative research program was subsequently initiated to improve the strength and stiffness estimates for string-type pallets, and to investigate the type and quantity of residues developed from pallet plants.

Together with the University of Tennessee, the Forest Service researchers have developed a computer program, SIMPAL, an acronym for <u>SIM</u>ulation of <u>PAL</u>let manufacture. SIMPAL helps pallet manufacturers, state and private forestry, and state forest products utilization specialists identify areas of manufacturing where mill waste and industrial residues are generated. SIMPAL's appeal is its simplicity of use and its versatile problem-solving capabilities through computer simulation.

A computerized design procedure for stringer-type pallets, the Pallet Design System (PDS), was completed in 1984. PDS is a result of a 4-year cooperative research program conducted by Virginia Polytechnic Institute and State University; the National Wooden Pallet and Container Association; the USDA Forest Service's Forestry Sciences Laboratory, Princeton, West Virginia; and the U.S. Forest Products Laboratory in Madison, Wisconsin. PDS allows pallet manufacturers to estimate the strength, deformation, and durability of a wood stringer pallet in a given handling environment in order to determine the specific pallet design suitable for a desired task.

Forest Service researchers, in cooperation with university researchers, have also investigated the physical properties of pallet materials produced from several important species, and have developed laboratory test procedures to document pallet durability and longevity. Varieties of pallet fasteners, construction materials, and designs have been analyzed for efficiency.

More than 30 pallet manufacturers are currently using the PDS computer programs, and six sets of the original personal computer disks of the SIMPAL program have been duplicated and submitted to individual pallet plants for use on their computers. The Pallet Design Program has also been programmed in BASIC for the IBM PC and APPLE II+ computers.

MAN MEETS COMPUTER





COMPUTER MODEL FOR SILVILCULTURE OF ALLEGHENY HARDWOODS (SILVAH)

David Linton and David Marquis Northeastern Forest Experiment Station USDA Forest Service Broomall, Pennsylvania

A new computer program developed by the Forest Service can take over much of the tedious work of data summary and analysis formerly performed by foresters.

Over the past several years, Forest Service researchers at the Forestry Sciences Laboratory in Warren, Pennsylvania, have developed guidelines for silvicultural treatments in Allegheny hardwood stands. These guides have been integrated into a systematic examination, analysis, and prescription process. The last two phases of this process, the data summary and the recommendation of a silvicultural treatment, have been automated in a computer program called SILVAH, an acronym for the <u>SILV</u>iculture of <u>Allegheny H</u>ardwoods.

The input data for the program are collected during a prism cruise of the overstory and an understory examination. The output includes tabulation and calculation of stand parameters, a recommended treatment, and a plan for implementing the treatment. One especially convenient feature of the output is a narrative that describes the present condition of the stand and the rationale for the treatment. This program is a valuable tool that can relieve the forester of much of the tedious and repetitive work of data summary and analysis.

The computer program simplifies the computations needed to implement the integrated system of stand inventory, analysis, and prescription that is developed from project research results. This increases the probability of its being implemented. The program also makes it easier to maintain high-quality inventory data, so it can improve our knowledge of the resource and aid in long-range management planning.

The SILVAH model is now used by managers of both private and public lands in Allegheny hardwood stands. It has been implemented at the Fort Collins Computer Center for use by the Allegheny National Forest, on an IBM mainframe at Hammermill Paper Company, on the Pennsylvania Bureau of Forestry's mainframe; and as an interactive program available to individuals through the Cooperative Extension Service at the Pennsylvania State University. Consulting and industry foresters are using SILVAH to prepare management plans for private and public clients. Foresters from Kane Hardwoods, the Tree-farm Family of Hammermill Paper Company, Forecon, Inc., and Lebanon Valley Timberlands, Inc., have also used SILVAH calculations to develop management plans and stand prescriptions.

Since this program is written in FORTRAN IV, adapting it to other mainframes has required only minor changes. This satisfies the needs of many larger organizations, but does not address the smaller one- or two-person operations. There is a distinct need for this program on a microcomputer that can be used by these organizations without mainframe computers, and computer programmers at Pennsylvania State University, in cooperation with Forest Service scientists at Warren, are currently transferring the program to floppy diskettes for use with IBM and APPLE microcomputers.

NEW AGE COMMUNICATION

DEANN ZWIGHT CREATED THESE CARTOONS ESPECIALLY FOR THE COMPUTER ISSUE. OTHER SELECTIONS FROM HER PORTFOLIO WILL BE SEEN IN COMING ISSUES. ZWIGHT IS A POST-SALE FORESTER AND CERTIFIED SILVICULTURIST ON THE LONG VALLEY RANGER DISTRICT, COCONINO NATIONAL FOREST, ARIZONA. PRIOR TO THAT (1979-83) SHE WAS A TIMBER SALE PLANNER FOR THE SHASTA-TRINITY NF ON THE WEAVERVILLE RANGER DISTRICT. ZWIGHT IS A GRADUATE OF THE UNIVERSITY OF MISSOURI IN FOREST MANAGEMENT.





UNITED NATIONS DECIDE ON WOMEN

The NGO (Non-government Organization) Forum - Nairobi, Kenya - July 1985: A Personal Account

Diane M. Calabrese Department of Biology Dickinson College Carlisle, Pennsylvania

y decision to participate in the Non-Government Organization (NGO) Forum 1985, held in Nairobi, East Africa, was based upon the premise that the forum seemed a place where women who had concerns about land use might be found. Held from July 10-19 in tandem with the United Nations Decade on Women World Conference, the conference schedule permitted many NGO participants to attend sessions in the U.S. Decade Conference and many U.N. delegates to participate in NGO activities. An estimated 20,000 people participated in the NGO's 1,198 pre-scheduled workshops. Furthermore, a large and uncounted number of impromptu workshops The diversity of the workshops reflected were held. the varied concerns of the (mostly) women who had traveled to Nairobi from around the world. Workshops ranged from "Image of Women in the Mass Media in Zambia" to "Technical Support and Women in Development" to "Bible Study."

Because of my interest in land use, I had hoped to meet additional women at the NGO who were also involved as reserve managers. Earlier opportunities for research, funded by the W.K. Kellogg Foundation, for a book establishing the connection between the philosophy of land use and the management of reserves, had taken me to all continents except Antarctica. But time spent in-residence at reserve areas and interviews with reserve managers revealed only one female on-site manager, Debbie Callzo, who shares the on-site position with her husband, Tom, at The Mile Hi Nature Conservancy Area, Arizona.

However, I cannot report that I made contacts with women concerned with reserve management. The women at the NGO had more basic concerns than the preservation of tracts of land and associated flora and fauna. And the delegates to the U.N. Decade Conference seemed, because of their elevated economic level (most were spouses of government officials and dressed very affluently), to be disconnected from global concerns. In fact, Nairobi in my mind became a microcosm for the global situation of women.

INTERNATIONAL

Since women in less-developed countries produce almost three-quarters of the food, one might hypothesize their links to the land are intimate. Women, because of their labors, however, merely constitute the largest group of landless laborers. Child-rearing and bearing obligations consume the energies of the women of the world. Furthermore, one-quarter to one-third of all families world-wide are provided for by a woman alone (Women . world survey, R.L. Sivard, 1985. World Priorities). If it is unrealistic to expect women forced into a subsistence life to be concerned about preservation, is it more realistic to expect women from developed countries or from high economic strata in developing countries to exhibit a greater awareness? Perhaps it is, but it does not match my day long--and, albeit, limited--experience with two delegates to the U.N. Decade Conference, one from Western Europe and one from West Africa.

These two women delegates and I had signed on for a mini-van ride to Lake Nakura National Park. As we rode along, chatting for hours, the women voiced their feelings about the deplorable effects of deforestation and other forms of habitat destruction, observable on our journey. They saw the cause of such destruction to be the result of the acts of uneducated people. Their own actions, however, were quite deplorable. At Lake Nakuru they urged the driver of the van on to a forbidden area that they might get a better look at the flamingos, and they left the van when they saw the opportunity to collect Marabu stork feathers.

Contradiction was the most obvious characteristic of the NGO and the U.N. Decade conferences. A cartoon reprinted in The New York Times on 28 July 1985, the day I returned to the U.S., summarized Nairobi succinctly. Sketched by Gary Brookins, Richmond Times Dispatch, the cartoons revealed a faceless speaker in the Kenyatta Center (an extraordinary structure in Nairobi-center, the site of the NGO opening and the U.N. Decade Conference) saying, "Fellow delegates to the U.N. Women's Conference: there are several appalling situations that we should take action on, such as apartheid in South Africa; the Iran-Iraq War; the nuclear arms race." Depicted on a barren strip of land not far from the city center were two women, one with a sickle in her hand and a baby on her back, and one with a load of wood on her back surrounded by a large number of children who appeared very poorly nourished.

I thought the Brookins' sketch was painfully accurate. Just over a mile from the city center, one could see a settlement of thousands of squatters in makeshift shelters with no amenities--no windows, no water, no toilets. The women from Kenya who participated in the NGO Forum were not drawn from such settlements; they came, instead, from the educated English and Swahili speaking women in the population. The women of the world who participated were not representative of the women of the world, but were educated women who had access to grants, or the affluence to fund their own travel.

Contradiction was everywhere, and the specific contradictions were endless. One of the sessions for which I had held out great hope was that of the Environmental Liaison Centre, a week-long series of discussions of "Women and Water Management," "Women in Forests," "Women and Energy," and "Women and Sustainable Agriculture." The speakers, with the

INTERNATIONAL

exception of a woman from the United States, were men. The focus was not on the (professional) women in any of these areas. It was instead a forum from which men promoted their research, ideas, and even their books while mentioning women peripherally.

As I sat chatting with two Kenyan women one day on the University of Nairobi campus, a well-dressed woman from Denmark came by and asked the women to be in a photograph with her while asking me to operate the camera. We complied in an unthinking way. Once she had the photograph, her pleasantness evaporated; she did not want to sit and chat with us,



and she could not be troubled to take the addresses of the women in order to send them copies of the photograph.

Even so, for every contradiction and frustration, there were bright moments. For example, I recall that on a visit to the National Museum of Kenya I discovered the exquisite watercolors of indigenous plants painted by Joy Bolly (Adamson) between 1939 and 1946. A visit to the Miiri Women Craft Self-Help Project and the Miiri School provided the opportunity to meet Veronica Waruhiu, a teacher of great resourcefulness and spirit in an overcrowded and understaffed institution. On another occasion, a translator conveyed the wealth of information presented by two herbalists who pointed out (during a workshop) that herbal medicine has a long history and that it will soon have government recognition and approval. The Tech and Tools exhibit provided great inspiration, as it stressed appropriate technologies (appropriate for everyone). And perhaps the most significant event of all occurred when women at the Kaweti Water Project were asked about their greatest aspiration. It took them only a few seconds to answer that they hoped for better education for their daughters, education equal to that of their sons.

Diane M. Calabrese is an assistant professor of biology at Dickinson College. A graduate of Gannon College, she received her M.S. and Ph.D. degrees at the University of Connecticut and joined the Dickinson faculty in 1981.



NEWS AND NOTES

OK GARDENERS - LET'S TALK DIRTY

When I'm out working in the garden, running my hands through the soil, I forget, for the moment, about the cares and woes of modern life, and my mind drifts back over the years, to biology class, when Mrs. Wright told us about these tiny parasitic worms that live in the dirt and get under your fingernails, and if you bite your nails, the worms get into your body and lay eggs in your muscles. I don't recall how serious a problem this was, but as a rule Mrs. Wright wouldn't discuss a parasite unless it was fatal.

Money-making idea: Has it ever occurred to you that, despite all these nature documentaries on tele vision, the average citizen hardly ever gets a chance to see parasites in their natural environment? I think there's a potential market here, and I bet you enterprising capitalists out there in our reading audience could make some big money with a television series called "Parasite Kingdom," or possibly even a roadside attraction:

TAPEWORM RANCH 600 FEET AHEAD

CAMPERS WELCOME SNACK BAR I know for sure that I would stop.

So Rule No. 1 of successful gardening is: Never bite your fingernails, or those of another gardener. Rule No. 2: Turn over the soil. This is important because over a period of time the rain has deposited a laver of radioactive acid on top of the ground, and you need to mix it in with the underlying soil so as to drive off the grubs. Grubs are writhing blobs of underground slime the color of spoiled mayonnaise, and your primary objective is never to touch one. I almost touched one once, and I'm not ashamed to say I fled on foot. I realize bass fishermen touch them all the time, but bass fishermen always seem to get a kick out of discovering a species less intelligent than themselves.

....Dave Barry

NEW LANDS FOR HAWAIIAN CONSERVATION

The U. S. Fish and Wildlife Service, in cooperation with The Nature Conservancy of Hawaii and the Hawaii Department of Land and Natural Resources, purchased 8,300 acres of native forest land (consisting primarily of rain forests) on the island of Hawaii. This is the first phase of an effort to establish a 33,500 acre Hakalau Forest National Wildlife Refuge for the long term conservation of endangered Hawaiian forest birds. This refuge will also maintain habitat for many other plants and animals unique to Hawaii.West Virginia Nongame News (Spring 1986)

RECREATIONAL INJURY LIABILITY

Recreational injury liability continues to be the overwhelming law-related concern of the recreation and parks field. There is no one grandiose federal solution, but several states have models to make the perceived crisis more manageable in the form of recreational immunity statutes. Virginia and Kansas have statutes which require a plaintiff to allege gross negligence or willful/wanton misconduct, rather than mere negligence, to sustain a claim for an injury sustained on public park and recreational facilities.

The Virginia State Supreme Court defined the standard of gross or wanton negligence as follows:

Gross negligence is substantially and appreciably higher in magnitude than ordinary negli-gence. It is very great negligence, or the absence of slight diligence, or the want of even slight care. It is a heedless and palpable violation of legal duty respecting the rights of others. The element of culpa-bility which characterizes all negligence is, in gross negligence, magnified to a high degree as compared with that present in ordinary negligence. Gross negligence is that degree of negligence which shows utter disregard of prudence amounting to complete neglect of the safety of another. Wanton negligence is of even a higher degree than gross negligence... manifesting arrogant recklessness of justice, of the rights or feelings of others, merciless, inhumane.

....James C. Kozlowski Parks & Recreation

POLYCORDER LOOKS PROMISING

A hand-held computer called a "Polycorder" is being field-tested by BLM for the first time in Oregon. The instrument features 128K of memory and a small keyboard to punch in data. Because the Polycorder is compatible with other computer equipment in BLM offices, it's easy to transfer data and process information gathered in the field.

When data was recorded by hand, it was keypunched and then visually verified. The Polycorder sidesteps those time-consuming steps.

It runs on batteries that last at least 40 hours, is fully weatherproof, weighs about two pounds, is set up to show data in pages, lines and columns like notebook pages rather than just volumes of data.

applications are also being developed and tested in Eugene.BLM News

'HISTORY THIEVES' TARGETED

Hundreds of sites in Region 1, which includes Montana, northern Idaho and parts of the Dakotas, have been harmed by people seeking artifacts, said Ernestine Green, regional Forest Service Archaeologist. Officials are concerned that the problem is getting worse, but say it is still not as bad as it is in the southwest, where pottery and Indian artifacts are widely sold on the black market. "Our own law enforcement people

"Our own law enforcement people have gotten a lot more serious about this," said Mike Beckes, the Billings-based recreation and wilderness staff official for the Custer National Forest. The best bet, he said, is to educate the public that plundering the sites is wrong, by posting signs near campgrounds and trailheads and passing out educational material.

In some cases, archaeological sites have been damaged by oil-drilling crews or others working on public lands. In other cases, people knowingly violate laws against digging up archaeological sites because they're after artifacts to sell or add to personal collections. Still another group--described as "Sunday-afternoon picnickers" by Green--are just poking around for artifacts without realizing that it's against the law.

>Associated Press Idahonian (June 19, 1986)

PARKS CREATION HAS ECONOMIC INCENTIVE

Two western states are looking at the creation of new national parks as spurs to economic development.

In Colorado, an advisory team appointed by Rep. Mike Strang, recommended the formation of a park around the Black Canyon of the Gunnison National Monument, but a key element of the park--designation of some 25 miles of the Gunnison River as wild and scenic--must still be resolved because of existing water development rights.

In Utah, Emery County officials began meeting with Utah Wilderness Association leaders and the congressional delegation to discuss the creation of a sixth national park, which would be Utah's third largest. As proposed by Emery County, the new 210,00-acre park would encompass the San Rafael Swell in east-central Utah and include two Bureau of Land Management wilderness study areas : Sids Mountain and Mexican Mountain.

....Betsy Marston High Country News

NEWS AND NOTES

TWO VERY OLD NEW YORK FORESTS PROVIDE ACID RAIN DATA

Over the next three years, two forests in New York will serve as laboratories for studies of the effects of atmospheric deposition on Northeastern forests. The State University of New York's College of Environmental Science and Forestry (ESF) has received research grants totaling more than \$1.3 million for this purpose, from the New York State Energy Research Corporation, and the Electric Power Research Institute.

The forests are the Charles Lathrop Pack Forest in Warrensburg and the Archer Anna Huntington Forest in Newcomb, New York. Both forests boast documented histories of research on forest ecosystem dynamics and comparative silvicultural practices dating back to the 1920s. This makes them invaluable to determining the effects of a long-term and widely dispersed phenomenon such as acidic deposition (acid rain).

Not only is there copious soil data, but the forest was planted on abandoned agricultural land with eight species of conifers, in both control groups and experimental plots. The soil is typical of large areas of Pennsylvania, New York and the St. Lawrence Valley--deep, level, glacial outwash sandy soil. The Huntington Forest is a

The Huntington Forest is a naturally regenerated deciduous forest on bouldery, loamy sand commonly found in extensively logged forest areas in the Adirondacks and New England. Basic meteorological data have been collected there since 1940, and an atmospheric monitoring station was established there in 1978.

><u>American Tree Farmer</u> (May-June 1986)

WHO STARTS WILDFIRES IN WASHINGTON?

Washington State has filed 11 lawsuits in an effort to recover wildfire suppression costs in excess of \$2 million. The State is entitled to recover suppression, investigation and, if necessary, litigation costs from negligent parties responsible for fires on DNR protected lands. The largest claim is for \$908,000 in suppression costs from Puget Sound Power & Light Company. About 600 acres of rugged terrain in Whatcom County burned; it was ignited by a Puget Power high-tension powerline. Two lawsuits have been filed against Burlington Northern Railroad for a total of almost \$471,000 in suppression costs incurred by the DNR on a pair of fires in July, 1985.

A lawsuit was filed for \$500,000 earlier this year against Littlejohn Logging, Inc. in connection with the July, 1985, "Lost Lake" fire in Kittitas County. The State claims the fire started when a logging cable was allowed to rub against an old, downed log.

....Washington State Department of Natural Resources

MIND YOUR COMPUTER ETIQUETTE

Here are rules of computer etiquette which should help people using electronic communications.

1. <u>Communication</u> <u>Priorities</u>. Preference is given first to a person sitting in your office, second to a person calling on the phone, and last, to the electronic message.

2. <u>Promptness</u>. Read the electronic inbox daily and respond promptly even if it is to inform the person that you are unable to send a complete response. Provide a date for the follow-up.

3. <u>Tone</u>. Since electronic messages lack important voice "tone" clues and other extralinguistic feedback that assist in getting the message across, be careful not to be too flippant, too abrupt, or too strong in language with unfamiliar individuals.

4. Long Messages. Precede or follow a long message with a meeting or phone call to clarify obscure or important points.

5. <u>Mailing Lists</u>. Use electronic mailing lists with care. Electronic junk mail is just as aggravating as the paper kind.

6. <u>Privacy</u>. Try to avoid looking at someone else's messages. Protect yourself by dimming the screen or using a terminal away from a public area.

> Pacific/Southwest LOG (April/May 1985)

SEXUAL EXTORTION A NATIONAL SCANDAL

The practice of men using their positions of power to extort sexual favors from women is, in my view, one of the hidden scandals of American business, American academia and American politics.

I've spent time in all three areas, and I do not know of any woman who, at one time or another in her professional career, has not been confronted with the reality of sexual harassment. Some years ago, the anti-feminist advocate Phyllis Schlafly told a congressional committee that harassment is a feminist myth, that it does not happen to women who do not in some sense provoke it.

This is arrant nonsense. I've talked with women comely and homely; sexually assertive and sexually shy; women who are proudly single and women who were visibly pregnant. All of them were approached by men who had power over their academic or professional advancement. All of them got the clear and unmistakable message that sex was the price to be paid for success.

Why hasn't the issue become more of a national scandal? Sex in the office is one thing; sexual extortion is another. I've come to believe the latter is more widespread, more blatant and more tolerated (in fact if not in word) than almost any other unethical practice.

....Jeff Greenfield is a media critic on ABC's "Nightline" and is a nationally syndicated columnist.

JOBS INFORMATION UPDATE

For women who are seeking jobs, here are two periodicals that are useful in locating jobs in the field of natural resources.

1. The Jobs Bulletin, published by the Nature People, P.O. Box 98, Warrens, Wisconsin 54666, (608-378-4344). It is published twice a month, and costs individuals \$38 yearly, or \$13 for three months. T± lists professional and technical natural resource, biology, and recreation positions and is based on information received directly from employers. They offer other services: a summer job announcement for \$12, which is published in early winter, list possible summer-only to employment, and a JOBSLINE, which has a tape recording of all natural resources positions which open and close between Job Bulletins. The phone number for JOBSLINE, as of October, 1985 is (608-378-4344) from 7 p.m. to 9 a.m. (CDT) and all day weekends and holidays.

2. Federal Career Opportunities, published by the Federal Research Service, Inc., 370 Maple Avenue West, Vienna, Virginia 22180-1059 (703-281 -0200). This specializes in federal jobs, and most jobs are for people who already work for the federal government and have status, but there are a few non-status jobs listed here. Non-status would mean anyone from the public could apply for the job, provided the person had the minimum qualifications listed. This periodical is expensive. It costs \$146 for 26 bi-weekly issues, but you can order six bi-weekly issues for \$36. Another drawback is that some government agencies that have natural resource jobs never list them here-for example, I've never seen a

vacancy listed for BLM jobs. If you have any questions or want to send me a resumé (since I occasionally hear directly about natural resource job openings) then write me at: 306 Walnut Drive, Fredericksburg, Virginia 22405.

Women in Forestry's Job Information Exchange

EVENTS



PROJECT PLANNING AND CONTROL IN FORESTRY: AN INTRODUCTION TO MICROCOMPUTER APPLICATIONS 10-13 September 1986 Oregon State University Corvallis, Oregon Contact Tim Cooney, Forest Resources Systems Institute, 201 N. Pine St., Suite 24, Florence, Alabama 35630 (205-767-0250).

ANNUAL MEETING OF THE NATIONAL WILD FOODS ASSOCIATION 19-21 September 1986 North Bend State Park Cairo, West Virginia This annual meeting will be held in conjunction with the Nature Wonder Weekend. The organization recognizes wild food gathering and useage as a pastime. There will be a wild food preparation contest and a listing of wild food specialists available for programs and consultation. Contact Edelene Wood, National Wild Foods Association, 3404 Hemlock Avenue, Parkersburg, West Virginia 26104

ASSOCIATION OF INTERPRETIVE NATURALIST'S 25th ANNIVERSARY NATIONAL WORKSHOP 21-25 September 1986 Delaware River Basin Area of Pennslyvania and New Jersey The Association invites all who are interested in the interpretation of the cultural, natural and or built environments to participate. Keynote speakers include Noel Brown, United Nations Environment Program, and William Penn Mott, Director, National Park Service. Field trips are workshops (wildlife planned. photography, computer creativity, etc.) as well as a program addressing application, management and research Contact AIN National concerns. Office, 6700 Needwood Road, Derwood, Marvland 20855.

WOMEN AND DEVELOPMENT: BEYOND THE DECADE 26-29 September 1986 Guelph, Ontario Sponsored by the Canadian International Agency (CIDA), to review the major lessons learned about women's contributions to development in the last decade, about identify problem areas and hopefully stimulate initiatives for future Contact the Development action. Education Program, Center for International Programs, 15 University Avenue, Guelph, Ontario NIG 1M8 (519-824-4120 ext 3778).

FUTURE FORESTS OF THE MOUNTAIN WEST: 29 September-3 October 1986 Missoula, Montana For more information contact Future Forests of the Mountain West, Center for Continuing Education, 125 Main Hall, University of Montana, Missoula (406-243-4623).

UNIVERSITY OF IDAHO

FOREST PRODUCTS RESEARCH SOCIETY (Inland Empire Section) September 1986 Moscow, Idaho

INLAND EMPIRE DRY KILN WORKSHOP October 1986 Moscow, Idaho For more information contact Peter Steinhagen, Department of Forest Products, University of Idaho, Moscow, 83843 (208-885-6126).

MICROCOMPUTERS ON THE RANCH AND RANGE Fall 1986 Boise, Idaho For more information contact Ken Sanders, Department of Range Resources, University of Idaho, Moscow 83843 (208-734-3600).

UNIVERSITY OF WASHINGTON FALL CONFERENCES

WASHINGTON STATE FORESTRY CONFERENCE Seattle

INTERNATIONAL SYMPOSIUM ON WORLD TRADE IN FOREST PRODUCTS Seattle For more information contact Continuing Education manager, College of Forest Resources, AR-10, University of Washington, Seattle 98195 (206-543-0867)

COLORADO STATE UNIVERSITY

HABITAT EVALUATION PRECEDURE GROUP TRAINING COURSE 20-24 October 1986 Portsmouth, New Hampshire

WETLAND CLASSIFICATION TRAINING 20-24 October 1986 St. Petersburg, Florida

FORPLAN: EVALUATION OF A FOREST 4-6 November 1986 Denver, Colorado

GEOGRAPHIC INFORMATION SYSTEMS 1-4 December 1986 Fort Collins, Colorado For more information contact office of Conference Services, Fort Collins, Colorado 80523 (303-491-6675).

AMERICAN FISHERIES SOCIETY AND INTERNATIONAL ASSOCIATION OF FISH AND WILDLIFE AGENCIES

14-18 September 1986 Providence, Rhode Island The theme is "Basic Science and Effective Fisheries Management: Bridging the Gap." The keynote speaker, William C. Leggett, of McGill University, Montreal, will explore how basic ecological approaches can lead to advances in understanding applied problems in fishery science. For additional information contact Roy A. Stein, 1986 Program Chairman, Department of Zoology, Ohio State University, 1735 Neil Ave., Columbus, Ohio 43210 (614-422-7826).



EVENTS

FORESTS, THE WORLD, AND THE PROFESSION Society of American Foresters 1986 Convention 5-8 October 1986 Birmingham, Alabama

The convention theme reflects the current issues of Canadian imports, tariffs, Japanese tropical deforestation, and acid deposition. There are working group activities, tours, and trips planned in addition to the more formal papers and programs. A morning gathering for women in natural resources will be held at the convention on Tuesday, October 7th at 7:00-8:30 am in the Civic Center North G Room. In addition, there will be a Women and Minorities workshop on Sunday, October 5th at 1:00 pm in the Civic Center North E Room. The workshop is entitled "Recruitment and Retention of the Non-traditional Professional into Natural Resources." The moderator is Michelle Harvey of North Carolina State University and features Denise Meredith of the BLM and other speakers from the Bureau of industry and Indian Affairs, academia. For more information and program materials contact SAF, 5400 Grosvenor Lane, Bethesda, Maryland 20814 (301-897-8720).

1986 COUNCIL ON FOREST ENGINEERING SYMPOSIUM AND ANNUAL MEETING 5-8 October 1986 Auburn University For more information contact Bobby Lanford, School of Forestry, Auburn University, Alabama 36849 (205-826-4050).

FORESTS AND THE 49TH PARALLEL: HISTORICAL AND COMPARATIVE PERSPECTIVES ON THE CANADIAN-AMERICAN FRONTIER 9-10 October 1986 Vancouver, British Columbia For information contact Harold K. Steen, Forest History Society, 701 Vickers Avenue, Durham, North Carolina 27701.

THIRTEENTH ANNUAL NATURAL AREAS CONFERENCE 21-24 October 1986 Potosi, Missouri For more information contact Natural Areas Conference, P.O. Box 180, Jefferson City, Missouri 65201 (314-751-4112, ext. 202). SOUTHEASTERN TECHNICAL DIVISION AMERICAN PULPWOOD ASSOCIATION 19-20 November 1986 Charleston, South Carolina For more information contact American Pulpwood Association, P.O. Box 5818, Charleston, South Carolina 29406 (803-747-6785).

SOCIETY FOR HUMAN ECOLOGY 17-19 October 1986 Bar Harbor, Maine "Human Ecology: Research and Application" will be the conference theme. Inquiries can be directed to: Richard J. Borden, Vice President, Society for Human Ecology, College of the Atlantic, Bar Harbor, Maine 04609, (207-288-5015).

BUILDING BETTER LOGGING ROADS WORKSHOP 23 October 1986

Sturbridge, Massachusetts The workshop is designed to help loggers and foresters build better roads. Sponsored by the Yankee Division of SAF and the Extension Foresters of Massachusetts, Connecticut and Rhode Island. For program information and registration contact Christine Peterson, Department of Forestry and Wildlife, Holdsworth Hall, University of Massachusetts, Amherst Massachusetts 01003 (413-545-2665).

NATIONAL MINED LAND RECLAMATION CONFERENCE 28-29 October 1986 St. Louis, Missouri For more information contact Claire Carlson, Coal Extraction and Utilization Research Center, Southern Illinois University, Carbondale, Illinois 62901 (618-536-5521).

NATIONAL SYMPOSIUM ON URBAN WILDLIFE 3-6 November 1986

For information on papers and program contact Lowell W. Adams, National Institute for Urban Wildlife, 10921 Trotting Ridge Way, Columbia, Maryland 21044.



WOMEN AND ISOLATION 8-10 November 1986 Saskatoon, Saskatchewan The isolation of women as a result of geographic or social circumstances will be explored. Sessions on phenomena and experience of isolation will consider: isolation in native communities; women in rural areas; minorities and women in academia; and employment and social policy. Contact Betty Pepper, Conference Organizer, 842 University Drive, Saskatoon, Saskatchewan S7N 0J7

CURRENT TOPICS IN FORESTRY RESEARCH: EMPHASIS ON CONTRIBUTIONS BY WOMEN SCIENTISTS 4-5 November 1986 Gainesville, Florida This symposium, sponsored by the school of Forest Resources and Conservation and the USDA Forest Service, will focus on papers by those doing research in natural resources. R. Max Peterson, Chief of the Forest Service will give the keynote address. Sessions include the following: genetics, soils and silviculture/ecology, nutrients, sociology of natural resources, economics, policy, insects and di ase, pollution, and regeneration. Speakers from government agencies, universities and government agencies, universities and private industry (including consultants) will be presenting papers. Container Corporation of America is sponsoring a tour. For more information, contact Sue Kossuth or Nancy Pywell, 1143 Fifield Hall, University of Florida, Gainesville, Florida 32611 (904-371-4360).

AMERICAN WATER RESOURCES ASSOCIATION 9-14 November 1986

Atlanta, Georgia The national and international meeting has water and human health issues for the theme. For more contact Joy Α. information Bartholomew, Deputy Secretary, Department of Environmental Quality, 44066, Baton Rouge, Box P.O. Louisiana 70804.

FOREST CLIMATE '86: SYMPOSIUM ON CLIMATE APPLICATIONS IN FOREST RENEWAL AND PRODUCTION 17-20 November, 1986 Orillia, Ontario For more information contact Allan Auclair, Forest Climate Coordinator, Federal LRTAP Liaison Office. Environment Canada, 4905 Dufferin St., Downsview, Ontario M3H 5T4 (416-667-4803).

- EVENTS

Current Topics Forest Research



November 4-6, 1986

THIRD NATIONAL URBAN FORESTRY CONFERENCE 7-11 December, 1986 Orlando, Florida

Sponsored by the National Urban Forest Council; American Forestry Association (AFA); U.S.D.A. Forest Service; Florida Division of Forestry--Department of Agriculture and Consumer Services. This conference is for citizens, professionals and organizations interested in city and town trees. The purpose is to improve the quality and condition of our urban forests, economically, ecologically and aesthetically. Designed to facilitate the collective community effort required for successful urban forests. Contact Ali F. Phillips, AFA, 1319 18th Street, N.W., Washington, D. C.

CENTRAL STATES MEETING ON HUMAN RESOURCES 2-5 December 1986

Land Between The Lakes, TVA "Stumbling Blocks and Stepping Stones: Developing Human Potential in Natural Resources," is cosponsored by the Society of American Foresters and the Tennessee Valley Authority-Land Between The Lakes. The conference focuses on three topics: Improving Human Productivity in Resources Institutions; Natural Changing Attitudes for a Changing Workforce: and Developing Potential Professional Through Management Skills, Career Direction, and Self-presentation. Contact Elizabeth M. Wellbaum, Golden Pond, Kentuck TVA-LBL, Kentucky 42231 (502-924-5602).

PLEASE NOTE THAT THE PHOTO CONTEST DEADLINE HAS BEEN EXTENDED TO DECEMBER 1ST. SEE PAGE 48 FOR ENTRY. INTERNATIONAL CONFERENCE ON WET SITE ARCHAEOLOGY 13-14 December 1986 University of Florida

Gainsville, Florida The conference will examine issues pertaining to archaeology sites located in wetland areas where fragile organic materials have survived because they have been incorporated directly into an oxygen-free, water-saturated deposit. Sponsored by the National Endowment for the Humanities and the University of Florida. A field trip is planned to the Windover site where cultural remains and 8000-year-old human skeletons, some still containing brain tissue within the crania, were recovered from a peat stratum. For additional information contact: Barbara A. Purdy, Department of Anthropology, 1350 Turlington Hall, University of Florida, Gainesville, Florida 32611.

LAND AND RESOURCE EVALUATION FOR NATIONAL PLANNING IN THE TROPICS 25-31 January 1987 Chetumal, Mexico Cosponsored by SAF. For more information contact H. Gyde Lund, U.S.D.A. Forest Service, TM, P.O. Box 2417, Washington, D. C. 20013.

MAINTAINING LONG-TERM PRODUCTIVITY: PACIFIC NORTHWEST ECOSYSTEMS Call for posters 31 March-2 April 1987 Oregon State University Corvallis, Oregon This symposium will summarize current knowledge about silvicultural impacts on long term site productivity, and provides guidelines for maintaining or enhancing productivity. The information will cover all important northwest timber species. For more Conference information contact

Assistant, College of Forestry. Oregon State University, Corvallis, Oregon 97331.

Emphasis on Contributions by Women Scientists

Co-sponsored by U.S.D.A. Forest Service - Southeastern Station Department of Forestry - University of Florida

CONFERENCE REPORT:

FOCUS ON WOMEN AND COMPUTING Focus on Women and Computing was a conference sponsored by the West Virginia University (WVU) Council for Women's Concerns, the West Virginia Association of Computer Education. WVU Human Resources and Education Microcomputer Lab, College of Human Resources and Education, Training and Development, Department of Human Resources, Alumni Association, Digital Equipment Association, and Division of Physical Therapy.

The Conference was held in September 1985 at the WVU Coliseum in conjunction with Computer Expo '85. Digital, AT&T, IBM, and Sperry were on hand displaying and demonstrating their products. The Conference co-chairs were Margo Neal, and Linda Stankos. Professionals from West Virginia University, University of Arizona State Akron (Ohio), University, Monongalia County Schools and AT&T delivered the conference papers.

The Conference was divided into three concurrent tracks: Education; Automation; Office and Business/Industry/ Home. Workshops were conducted on Basic Instruction for Word Processing, Stress in the Work Place, Evaluation of Software, Purchasing the Right Computer for Your Needs, Legal and Ethical Aspects of Computers, Feminization of the Computer--the Necessity of Avoiding Gender Stereotypes in the Educational Setting, Health Risks and the Video Display Screen, Should Computer Literacy Differ for Men and Women?, and more. While the workshops were being presented, software hands-on demonstrations were conducted at the computer labs at the Library and Allen Hall (on the WVU Evansdale Campus).

EXPERT SYSTEMS: SELECTING APPROPRIATE APPLICATION AREAS

Molly Stock Department of Forest Resources University of Idaho Moscow, Idaho

nterest in the use of artificial intelligence (AI) techniques in natural resource management has grown considerably in the past few years. Al systems are being developed in forest engineering, fire management, silviculture, pest management, and many other areas. These systems are being used for professional development and education, distribution of expert advice to decisionmakers, transfer of new technology, as interfaces for more conventional models and planning programs, and for several types of both basic and applied research in forestry.

Artificial intelligence is a broad area of activity that aims to make computers perform activities which, if done by a human, would be considered intelligent. Intelligence involves handling information that is ambiguous, complex, uncertain, or incomplete. In 1950, Alan Turing said that a computer could be considered intelligent if you couldn't tell it was a computer. Obviously, we are still far from this goal. When you work with most computers, the computer acts much more like a machine than like another human being. However, considerable progress has



been made in the last 10-20 years, with the advent of new computer languages (such as LISP) and improved hardware.

'Experts and expert systems. Expert systems, one branch of AI, are an attempt to capture and replicate the problem-solving ability of human experts in narrow subject domains, to transfer this expertise to a computer program. An expert system is an attempt to "clone" an expert. But what is an expert? Edward Feigenbaum, often considered the father of the field of expert systems, says (Feigenbaum and McCorduck 1983):

. . . the matters that set experts apart from beginners are symbolic, inferential, and rooted in experiential knowledge. Human experts have acquired their expertise not only from explicit knowledge found in textbooks and lectures, but also from experience: by doing things again and again, failing, succeeding . . . getting a feel for a problem, learning when to go by the book and when to break the rules. They therefore build up a repertory of working rules of thumb, or "heuristics," that, combined with book knowledge, make them expert practitioners.

Why build an expert system? There are many practical reasons for attempting to capture such expert behavior in a computer program. Experts, almost by definition, are scarce. They are also perishable; they get sick, they retire, they take other jobs.

Also, with an expert system to take over some of the more routine (but not necessarily uncomplicated)

aspects of the expert's job, an expert system could allow the expert to use his/her time more productively to work on more unique or troublesome problems. Access to the expertise could be cheaper, more consistent, and timely. Finally, an expert system can increase the level of performance of non-specialists by serving as an advisor and expanding the capabilities of the novice.

Types of expert systems and advantages over conventional computer programs. Expert systems have been developed for a number of different types of tasks: interpretation, prediction, diagnosis (perhaps the most common type), design, planning, monitoring, debugging, repair, instruction, and control. All of these tasks, of course, can also be done by conventional programs, but expert systems have some important advantages over traditional computer methods. They have, for example, the ability to explain their reasoning; they can provide documentation that gives credibility to the decisions made by their users. This documentation can add support to the validity of a decision if it is questioned later on. Expert systems can deal with uncertain or incomplete information. A response of "I don't know" by the user does not stop the computer. Expert systems are easier to maintain, update, and change because the domain-specific knowledge base is, to a large extent, separate from the control or reasoning mechanism in the program. And an expert system is easier to use than most conventional computer programs. An expert system interacts intelligently with the user, and requires considerably less training to use. A well-developed expert system can often be used after only 5-10 minutes instruction. Compare that to some of the programs you now use--programs that often take a week to simply learn the basics.

Ease of use. To illustrate how an expert system simulates, often quite successfully, a human expert, and also how relatively easy to use a good expert

system is, let me describe a simplified version of one of the commercially available wine advisors. These programs simulate the behavior of a human expert that might be consulted before selecting a wine for a particular purpose. A wine advisor expert system contains a great deal of expert knowledge about wines, but all the user needs to know about the computer : system itself is how to start the program--which key to hit, for example, or even just how to turn the computer on. Then the



computer asks, the way a human expert would, a series of questions about the meal that the wine is to go with, as well as the personal preferences of the user for different types of wine. Suggested responses are given, but the computer will accept an "I don't know." The series of questions goes something like this:

What is the main component of the meal (beef, pasta, chicken, fish, etc.)?

- Does the meal have a sauce with it?
- Is the flavor of the meal delicate, average, or strong?
- What color wine to you generally prefer (red, white, rose)?

Do you prefer dry, medium, or sweet wines?

Is low price important to you?

. . . and so on.

Once you have answered these questions, the wine advisor comes up with a list of wines that would be appropriate, ranked according to suitability. For example,

chardonnay (.94) reisling (.94) white burgundy (.90) loire (.85) chablis (.36) sauvignon blanc (.25)

Thus, the first two wines might be the best choices in the particular situation, and the last two least appropriate, but the user takes the advice, as he/she would from a person advising about wines, and makes his/her own decision about what wine to buy. The user can also ask the wine advisor to explain why certain choices were made, or why others were not.

<u>Components of expert systems.</u> Here is a sketch of the various components of an expert system, and the three types of people involved in its development and use.



The expert system itself includes a user interface--the English language questioning capability, the "friendly" part. It also has a control mechanism, commonly called an inference engine, and a domain-specific knowledge base, usually in the form of rules and facts about a particular subject. There is, of course, one or more domain experts who are the source of expertise built into the knowledge base.

Role of the knowledge engineer. The knowledge engineer serves as an intermediary between the expert and the computer, extracting knowledge from the human expert and translating it into computer language. The knowledge engineer is trained in techniques of interviewing, and dissecting and structuring knowledge. He/she helps the expert articulate problem-solving strategies, which is usually not a simple task. Many experts cannot easily or clearly explain how or why they do what they do. To extract and codify this information takes time and effort by both the knowledge engineer and the expert. A knowledge engineer is familiar with AI languages and tools, but is not the same as a computer programmer. Some programmers are knowledge engineers, but skills in communication and cognitive psychology are needed that go beyond computer programming. This composite of skills seems to require a less methodical and a more creative personality type.

Finally, the knowledge engineer can, and should, have some familiarity with the problem domain, but he/she should not be the expert. By not being the

expert, the knowledge engineer makes fewer of the same assumptions that the expert makes, and is better able to break the problem-solving activities of the expert into their simplest components. There is not total agreement on this subject, however. Clive Dym (1985) says:

Another question is whether the domain expert can also be the knowledge engineer. Or, can a domain expert build his own expert system? The answer to this question is not entirely without controversy, as some Al researchers imply that the process would not work, that an expert would not be able to successfully articulate his knowledge on his own, whereas others claim that there is no a priori, logical reason that would prevent a domain expert from being his own knowledge engineer. There are two pragmatic dangers worth noting, however. One is that domain experts wishing to build their own system must learn a lot about knowledge representation, . . . and they should not underestimate the enormity of the task. On the other hand, although knowledge engineers learn a lot about the domain while building a system, they remain at best talented amateurs in that field and thus should remember that they are not domain experts.

Building an expert system requires a patient expert and a persistent knowledge engineer. It is a time-consuming process, and the actual programming of the computer is often secondary in difficulty and duration to the knowledge acquisition process. The process is most painful in the beginning, when the expert must explain in detail some of the fundamental activities and ideas in his/her field to the knowledge engineer. In my experience, this initial orientation phase--preceding any first attempts to write computer code--takes about 6-10 hours, over about 3-4 separate interviews with the expert. Skipping or abbreviating this phase results in an overly algorithmic and often quite useless expert system. Once past this initial phase, however, a more equal partnership develops between the knowledge engineer and the expert, and the process of building the expert system becomes a very enjoyable and absorbing process for both individuals.

A description of the initial development of a now successful expert system to control the cooking of Campbell's Soup illustrates the stage of early knowledge acquisition (Abatemarco 1985). An expert, Aldo Cimino, was retiring after 43 years with the company:

To prepare for Cimino's departure, Campbell's decided to drain his brain--that is, to "can" Cimino's accumulated knowledge--into a personal computer expert system . . . Cimino was a tutor to "knowledge engineer" Michael Smith . "He had no idea of what a sterilizer is," Cimino recalls. "We spent a couple of days getting him familiar with the equipment. I took him into the plant and showed him one. I had to teach him what they were." Smith and Cimino conferred on a regular basis . . . At each meeting, Smith would take notes on Cimino's outpouring. "I had a tape recorder sometimes," Smith explains. "Mostly we kept talking until I understood his job." The going was slow at first, Smith recalls. "It's extremely discouraging to sit down and have somebody with years of experience talk to you about their work. You feel like you will never understand it." But gradually, Smith got

comfortable with Cimino's vernacular, and Cimino began to sense the kind of information Smith was fishing for. "He would ask me 'What goes wrong with these things?!" Cimino says, "and ! would tell him. He'd say 'Okay, let's take them one at a time,' so ! would tell him step by step what ! do when there are temperature problems, or if the cooker doesn't run, or whatever. I told him the solutions I would try for each problem."

Selecting a topic suitable for an expert system. As more and more people become aware of the potential value of expert systems in almost all subject areas, one of the first questions that is asked is whether a particular area would make a good expert system. To help answer this question, here are some of the criteria that have been applied to selection of a topic appropriate for expert system development:

- More skilled people are required than are available in the particular area.
- 2) There is at least one expert who already knows how to solve the problem, and there is at least one expert potentially or actually available, cooperative, and committed to working with a knowledge engineer to start building an expert system.
- 3) At least 3-5 years is required to become expert at the task, and the scope of knowledge required exceeds reasonable demands on training of novices. That is, the task is not easily transmitted from expert to beginner. It cannot be learned in a matter of months and it is difficult to train sufficient numbers of people to carry out the task expertly.
- 4) The expert should be able to carry out this task in a matter of hours or at least no more than a day or two, and should be able to give advice on it over the phone--in other words, without extensive recourse to graphs or other pictorial aids.
- The problem domain is narrow but deep (highly specialized). There are large numbers of possible solutions to the problem.
- 6) Problem solution requires heuristics, general rules of thumb or techniques that experts use to seek a solution. (Heuristics improve the efficiency of search for a solution to the problem; they guide the search for a solution. Examples of heuristics are checking the fuses when an appliance doesn't work, or visiting the nearest city first when a series of cities must be visited. A general heuristic most people use, when given a particular problem to solve, is to look for a similar problem that they have solved before and try to use an analogy.)
- There should be a clear financial justification (or other benefit) for building the expert system.
- 8) The scope of the problem can be constrained for initial work. In other words, a small but realistic part of the problem (called a "prototype") can be attacked first. A prototype expert system usually takes 6-12 months to develop. It differs from what is often termed a "toy" system--intellectually interesting but otherwise useless--in that it covers a fully useful subset of the entire problem domain, and can be used as the basis of judgments about the value of the

system and the possibilities for future development. A well done prototype serves as the basic building block for a more elaborate system.

A corollary to this criterion is that the prototype concept should be <u>obviously</u> linked to numerous other applications once the system has been worked out, or to research or points of view currently being investigated by other people. Although useful by itself, the prototype should be easily seen as the tip of the iceberg--something that readily starts people thinking of how it can be extended into broader or different applications.

- Data and test cases should be available to test the expert system.
- Experts should agree. The area should be well understood at least by the few experts in it.

Objective and intelligent evaluation of the appropriateness of the expert system approach to a particular subject area is essential. Thorough evaluation in this early stage greatly increases the probability that the resulting expert system will be a success. Skipping this initial evaluation is probably a major reason for the failure of many expert systems, and their lack of acceptance by potential users.



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FORESTRY COMPUTER APPLICATIONS AT BOISE CASCADE CORPORATION

Lora K. Iverson Cartographic Specialist Timberland Resources Information Systems Boise Cascade Corporation

Boise Cascade Corporation, headquartered in Boise, Idaho, is the fourth largest timber and wood products company in the United States. It is a fully integrated company with major operating facilities in paper products, packaging containers, building materials, timber and wood products and office products. Boise Cascade is responsible for the management of over six million acres of owned or controlled North American timberland. Fee timberland is the company's second largest asset. In the United States, Boise Cascade manages over three million acres: close to 300,000 acres in the Pacific Coast Forest, 1.2 million acres in the Intermountain Forest, 1.1 million acres in the Northern Forest, and one million acres of Canadian timber licenses is also managed by Boise Cascade Canada.

The primary management support for this timber asset lies with the Timberland Resources Information Systems and Planning Departments within the Timber and Wood Products Group. These departments' are charged with the responsibility of improving the productivity of Boise Cascade's timberlands by implementing, operating, and maintaining our intensive forest management programs.

PHASE I AND II OF INTENSIVE FOREST MANAGEMENT

Our intensive forest management program was implemented in two phases. While building management models for various timberland operations at Boise Cascade, a common deficiency was identified. We were using antiquated and inefficient methods to analyze, store, and retrieve timber-related data. So Phase I (1975-82) was designed to assess timber management alternatives using the best existing forest data and modeling techniques.

Phase I was successfully completed and resulted in a 38% increase in our allowable cut figure. This allowable cut calculation, designed to maximize the economic return to the company, is our best method of determining the annual harvest level that will give us a sustained yield over time.

Phase II is presently being implemented. Its objectives are to correct, update, and improve our tabular forest data and modeling process, and to initiate state-of-the-art automated analysis techniques to support long term management plans with short term budget planning. Boise Cascade uses several components for computer analysis of forest information. The simulators, models, the Management Information System (MIS), the Geographic Information System (GIS), and the Geographic Response Generation and Evaluation System (GEORGE), are all essential parts of Phase II. Although I will discuss these components separately, the integration of all three programs and data bases creates a powerful and flexible tool for timber management.

SIMULATORS AND MODELS

Our tabular forest data provide input in various growth and harvest models. We currently use PROGNOSIS and MFPS (Multi-Purpose Forest Projection System) in several regions to predict future volumes and values. Optimizing economic timber opportunities is done using MUSYC (Multiple-Use Sustained Yield Calculations) or FORPLAN harvest schedulers. The input consists of management alternatives generated through the growth simulators. Our LAM (Log Allocation Model) determines a better allocation of delivered wood to manufacturing and conversion facilities. These are several of the programs that are used to give various kinds of management answers in Boise Cascade's Intensive Forest Management Program.

MANAGEMENT INFORMATION SYSTEM (MIS)

The MIS is a tabular database developed to support forest management activities in our nine operating regions. As foresters periodically visit each stand, observations and measurements of at least 50 categories are recorded and entered into the computer. Within each of the 50 categories there may be as many as 200 individual descriptors of stand characteristics. These observations include forest conditions, productivity, habitat, and growth history, as well as other stand-related factors. We have also input into the MIS information on ownership, acreages, road types and miles, proposed silvicultural treatments, and logging methods. There is also a description of timber inventory and growth projections, and a history of the actual operations for a given stand.

The MIS is an enormous compilation of tabular data that tells a very complete story about the individual parts of the forest. A variety of MIS programs have been written by our personnel to edit data, sort, and generate reports. The most versatile of these is the variable report writer. The variable report writer (VRW) allows users to select and report various stand characteristics (data fields) from the MIS data base. The user can define data fields and records, sort fields, format pages and print results. As the name implies, the VRW has a great deal of flexibility; it permits the user to select specific variables from the MIS data base. Once the VRW query has been completed, the result of the report may be displayed on the CRT terminal or routed to a printer.

GEOGRAPHIC INFORMATION SYSTEM (GIS)

Despite our attempt to update and improve the MIS, it represents only a portion of the analytical capabilities for developing various timber management alternatives. Graphically portraying the geographic information relating to the MIS data base provides the necessary link to maximize the benefit from our timberlands.

With available computer technology, it is possible for us to use a Geographic Information System (GIS) to supplement and enhance the MIS. The GIS allows us to digitize, manipulate, and plot geographic data. The end result of a database query then allows our foresters to readily interpret from a map what they would otherwise decipher from a stack of computer printouts. Supplemental information related to the mapped data can be requested in easily understood reports.

Foresters can now explore endless "what if" questions in great detail. Imagine asking the computer to tell you where you can find areas between 20 and 50 acres, within 100 feet of an all-weather road, suitable for tractor logging. The GIS combines the capabilities of a computer graphics system, an automated map-making system, a management information system, a data analysis system. By integrating all of these computer analysis capabilities into a user friendly environment, timberland management personnel now have a powerful and flexible toolbox for meeting timber management goals.

GEOGRAPHIC RESPONSE GENERATION AND EVALUATION (GEORGE)

GEORGE is a software program developed by our Timberland Resources staff to query a data base and produce maps describing the query output. It was originally created to interface the tabular MIS data to the corresponding geographical data. In other words, with a stand MIS and a map data base in place, the variable report writer, when run within GEORGE, can provide a map of the area as well as the report itself. GEORGE can be interfaced with any tabular database and related geographic information. For instance, results from a roads database query might give you a map showing all 100 foot right-of-way roads less than five years old for a particular township.

RESPONSIBILITIES

For these systems to fit together, there must be a map base in place. This is where most of my job responsibilities lie. Four people, including myself, input or "digitize" the geographic map data in the computer. It is our responsibility to see that the operating regions receive a map product that is reliable and useful. We interact and communicate with each region to ensure that the maps are meeting their goals and objectives.



Our digitizing facilities in Boise include four workstations, each equipped with a Hitachi digitizing table and a Tektronix 4105 graphics terminal. The workstations are linked to our Data General S140 system. We also have several Apple MacIntosh and Data General terminals that operate from a Data General MV4000 for data manipulation operations.

Political boundaries, ownership, roads, streams, and stand types are common layers of information that are input. Topography, soils, geology and precipitation layers can also be digitized.

Since a forest is dynamic and always changing, so are each region's maps. Yearly, we update each region's roads and stands by adding, deleting or altering digitized information. This brings them up-to-date with what's on the ground. Once the updates are completed, they receive a new set of maps from which they can work for another year.

GEO-REFERENCING AND CALIBRATING

For reliable data, an accurately geo-referenced map base such as the USGS 7.5 minute topographic or orthographic series is necessary. These provide a detailed base for roads, trails, surface water, topographic, and other related geographic features. They provide a source for registering the digitizing table to a coordinate system on the ground. State plane, UTM, latitudes and longitude coordinate systems are commonly used.

During map set-up, control points are established and assigned X and Y values. These values can be found from coordinate conversion tables. The map is then taped onto the digitizing table and each control point value is encoded into the computer. The map is now considered calibrated to its actual position on the ground.

DIGITIZING

Digitizing takes place on a digitizing table. Our tables in Boise are 3 by 4 feet and resemble large light tables. Many of our regions have small desktop versions varying in size from 18 to 24 inches square. Once the map is calibrated, the operator can trace lines and boundaries from the map with a hand-held cursor. The cursor, with built-in crosshairs, sends signals to the computer which automatically records X and Y coordinates into the system. These X and Y coordinates continuously link other X and Y pairs to form a sequential list of coordinates which describe some linear feature.

All features are digitized as "spaghetti" into one map file in an area, network, or location format. Ownership boundaries and timber stands, for instance, are represented as areas. Networks are linear features such as roads, streams, and power lines. Information occurring at a single point, such as bridges, Continuous Forest Inventory plots, or mill sites, can be represented as locations.

Once digitizing is complete, the areas, networks, and locations are separated into individual files. These files can then be manipulated by a variety of functions. The information can be removed bit by bit or overlaid with other types of data. Another function places a "buffer" around polygons, lines, or points. A report can be produced summarizing what each file contains, such as acres, miles, labels, and sequence of input. We can produce maps on paper or film, in a variety of colors and using many different line styles.

CONCLUSION

Our GIS system provides a responsive framework allowing individual operating regions the flexibility of on-line manipulation, reporting, and plotting of forest information. The MIS/GIS allows users prompt access to current tabular forest and geographical data. It is an excellent management and recordkeeping tool which can document daily forest field work and information. Analysis of forest data can now be accomplished by computing and comparing all possible opportunities and alternatives available for obtaining the best solution. Endless "what if" situations on the informational databases serve as an additional tool for assisting foresters in forest planning and helping to meet timber management goals. Our computerized GIS and all of its components have made the realization of the intensive forest management objective of Boise Cascade a practical achievement.



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While working toward her degree, her summers were spent working for the Washington State Department of Natural Resources and Oregon State Department of Forestry.

In 1982, she was hired by Boise Cascade Corporation as a Forester Intern in Astoria, Oregon. Duties included slash burning, timber inventory and tree planting inspections. In 1984, she transferred to her present position in Boise, Idaho as Cartographic Specialist. At the same time, she has been continuing her education at Boise State University in the areas of cartography and business.

Put Your Money Under Your Mattress?

Some things seem awfullv familiar: A conservative President is in office. There's fighting in Nicaragua. The stock market's on a roll. The rich have lots of new toys, parties are fashionable again, and there's heavy consumption of illegal goods. Real estate is booming in New York, while land values are plummeting in the Midwest. Farmers are hurting, and commodity prices are falling. Inflation has even turned negative.

It sounds like today, but it could be the 1920s with just a few differences. Then, Calvin Coolidge was President. We sent the Marines into Nicaragua. Prohibition was in full swing, and motorboats were bringing in rum, not cocaine. Indeed, the parallels between the 1920s and the 1980s are so numerous as to be scarey. Can the Crash of 1929 and the Great Depression happen all over again?

On Wall Street a number of economists and investment strategists look around and see reminders of the 1920s. Today's market has convinced dozens of kids barely out of college that they've got the Midas touch. In an atmosphere where a 33-year-old pulls down more than \$1 million a year and allegedly still finds it necessary to profit from insider trading, something has clearly gone awry. And when financiers are reaping unheard-of profits--legal or otherwise--while farmers and oilmen count their losses, the parallels with the 1920s become sharper.

Today the nation's price indexes plunging, dragged down by are plummeting oil prices. In the first four months of 1986, producer prices fell at a 12% annual rate, while consumer prices dropped at a modest 2.5% annual pace. A sustained decline in prices is perilous. Debt accumulated on the assumption that prices would rise ever higher cannot be paid, collateral vanishes, and transactions evaporate. Buyers hold back in expectation of further price declines, making things worse. In an ever-deepening deflationary spiral, individuals and businesses alike go bankrupt.

That's exactly what happened during the Great Depression in the 1930s. But the process had already begun by the second half of the 1920s. From 1926 to 1929, wholesale prices fell 5%, and energy prices fell 17%. Certain regions of the nation were already in a depression, just as certain regions are today.

Fast growth in the monetary aggregates, meanwhile, is not nearly as significant as the recent plunge in velocity--the rate at which money turns over. A long and sustained drop in velocity translates into slower business activity. Velocity began falling in 1926, some three years before the Depression began. Finally, the argument that inflation will reignite because of rising wage rates may credit the economy with more pep than its got.

In 1984, according to the Census Bureau, 14.4% of the entire nation's

....Karen Pennar Business Week (June 9, 1986)

population lived below the poverty level, which was \$10,609 for a family of four. That was only a smidgen below the previous year's level but well above the 1973 low of 11.1%. On the other side of the coin, the more affluent portion of the population has grown. The Census Bureau reports that in 1984, 15.8% of all families had an incoming exceeding \$50,000, as measured in constant 1984 dollars, up from 13.8% in 1980 and 11.3% in 1970. These shifts mean that the middle-class base has shrunk in recent years--an important development, because some historians believe that the absence of a strong middle class exacerbated the Depression.

So where are we going from here? Is the country hurtling towards depression simply because in so many ways, economic and social, it resembles the 1920s? Are we in for a depression simply because 60 years or so have passed and some people believe the economy moves in long cycles that dictate that a crash must come? Not quite. Mistakes have to happen, too. Economic historians have argued for years about which mistakes tipped the balance and caused the Great Depression. Among the candidates: The Federal Reserve Board's sudden and sharp tightening of monetary policy; unregulated, debt-financed speculation in the stock market; government's generally passive stance toward the economy; the passage of the strongly protectionist Smoot-Hawley Act.

PALATABILITY OF ERYTHROMYCIN-TREATED FOOD ADMINISTERED IN VARIOUS CONCENTRATIONS TO CHINOOK SALMON

Ervthromycin, an antibacterial agent, has decreased the incidence of bacterial kidney disease in juvenile salmon when fed to fish in their daily ration. However, the effectiveness of this treatment may be reduced by refusal or reluctance of fish to accept drug-treated food, particularly when in higher concentrations. Chinook salmon from Dworshak National Fish Hatcherv were fed pellets of food supplemented with 0, 9, 13, or 25 percent Gallimycinso (erythromycin thiocynate). Behavioral observations were recorded on individual fish to determine palatability of the feed. Tests were conducted at Marrowstone Field Station, Seattle National Fisheries Research Center, Washington.

Fish fed pellets containing erythromycin took longer to strike each pellet, rejected a larger portion of the pellets presented to them, consumed fewer total pellets, and took a longer time to consume each pellet than did fish fed a normal diet (all p<0.05). The highest mean number of rejections of pellets was observed in fish food containing 25 percent Gallimycin₅. However, the time (seconds) for the fish to eat a pellet was greatest for the group fed the 13 percent Gallimycin₅₀ pellets.

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THE EFFECT OF MICROSITE PREPARATION ON DEVELOPMENT OF CONIFER SEEDLINGS IN NORTHERN IDAHO

Douglas-fir and western white pine were planted in hand-prepared micro-sites in northern Idaho. Site preparations were fumigated and nonfumigated individual tree planting beds, scalped soils, undisturbed soils, and undisturbed soils injected with three levels of fumigant. Several tree character- istics were measured four times during the first growing season including height, stem caliper, needle length and weight, rooting depth, root weight, and top weight. Results through the first growing season showed that fumigated beds provided the most favorable site for early seedling performance. The greatest response was seen in stem caliper, needle length, and needle weight. The undisturbed soils injected with fumigant also provided a better medium for tree growth compared to the scalped and undisturbed soils. There was some evidence that western white pine responded better to the treatments than Douglas-fir.

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HERBIVOROUS AND PARASITIC INSECT •GUILDS ASSOCIATED WITH GREAT BASIN WILDRYE

Elymus cinereus Scribn. & Merr were investigated at the Idaho National Engineering Laboratory and Craters of the Moon National Monument during 1982 and 1983. Life-stage, abundance, plant part utilized and location were recorded for each insect species collected. Forty-six species of phytophagous insects were observed feeding on various morphological regions of the bunchgrass. Eight parasitoid species were reared and identified from insect hosts in the plant culms.

The relatively high diversity of phytophages on basin wildrye may be due to the grass' tall, bunchgrass growth form, its abundance within its habitat and geographic range, and the large number of related species of grasses in the region. The majority of the species that constitute the wildrye herbivore guilds were oligophagous; restricted to grasses. Many feed on grain crops as well as other native and introduced grasses.

The wheat stem sawfly (Cephus cinctus Nort., Hymenoptera Cephidae), a pest species associated with wheat, feeds internally in basin wildrye The life history of this culms. insect on wildrye and its impact on seed production of the bunchgrass were examined. From 62 to 88% of wildrye plants were infested with the sawfly. Adult sawflies emerged from wildrye culms at the time the inflorescences emerge from the grass sheaths. Larvae developed within culms, consumed vascular tissues and may have impaired transport of water and carbohydrates through the culm. Mean seed weight and mean number of caryopses developing within wildrye florets were significantly reduced in culms containing sawfly larvae p<0.018, respectively). (p<0.006; Differences in germination rates of seeds from infested and noninfested culms were not significant (p>0.05). Berta Youtie

Plant, Soils and Entomological Sciences University of Idaho NEAREST NEIGHBOR INFERENCES: A SAMPLING PROCEDURE WHICH PRESERVES CORRELATIONS BETWEEN MULTIVARIATE DEPENDENT ATTRIBUTES

The broad objective of this study is to investigate a sampling procedure which can be used to link detailed information from resource response models with large-scale forest planning models, without the problems arising from the use of aggregated data.

We propose a new sampling inference procedure called "nearest neighbor inference", which is applicable to multi-stage sampling designs. The procedure is analogous to post-stratification, with the modification of having one and only one sample unit per stratum. Stratum boundaries are defined by a distance measure whose weights are obtained from the canonical correlation between a set of dependent attributes of interest and the independent variables used to define the strata. The motivation for using nearest neighbor inferences is to preserve the nuances of correlations between attributes within sampling units. Preserving correlations between multivariate dependent attributes is particularly important when models (such as those designed to predict responses several natural resources simultaneously) are to be driven using sample unit data as input. By using only one sample unit per stratum, errors of aggregation are avoided, and the full range of natural variation preserved to meet constraints is in planning how a resource system can best be exploited.

We compared the nearest neighbor procedure to simple random sampling, stratified random sampling, and regression estimators for its ability to predict ground-sampled attributes (volume, growth, yield, site index, stocking, crown competition factor, and basal area) from photo variables. Preliminary results indicate several advantages in using the nearest neighbor approach over regression. While linear regression may distort the relationship between a dependent variable and its predictors, especially for hard-to-predict attributes, the nearest neighbor procedure reproduces more accurately the correlation structure of the original data. It may therefore be more applicable in sampling situations requiring simultaneous estimates of multivariate (correlated) attributes.

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RESEARCH IN PROGRESS

SOIL PHYSICAL AND CHEMICAL PROPERTIES OF THREE SITE PREPARATION TECHNIQUES AND THEIR EFFECT ON GROWTH AND SURVIVAL OF SEEDLINGS IN NORTHERN IDAHO*

white Western and pine upuglas-fir are often hampered by roughty soil conditions that occur n the northern Rocky Mountains. 'his study was initiated to compare soil properties from three site and preparation techniques and their effects on seedling growth and survival. Surface organic matter and mineral soil was mechanically mounded to form raised planting beds on two cedar-hemlock sites in the northern panhandle region. Idaho Soil properties and seedling growth were compared with scalped and scarified treatments on the same sites. Measurements of tree characteristics and analysis of soil nitrate and incubated ammonium samples were taken four times during the growing season of 1983. Organic matter content, bulk density, total Kjeldahl nitrogen, total phosphorous and soil cations were taken at the beginning of the growing season.

Organic matter content was significantly (p<0.05) altered by the site preparation techniques, as was bulk density. Nutrition of the soil was considerably improved in the raised planting beds. The increase in organic matter in the raised beds acted as a mulch, thus retaining subsurface moisture and moderating soil temperature. This, combined

lower bulk densities with and improved nutrient status, produced better growth and survival of outplanted conifer seedlings. Poor seedling performance and low nutrient reserves were most evident in the scalped treatment. Bedding the soil was extremely beneficial in areas of low organic matter and warmer, drier sites. However, in areas with good soils, the undisturbed treatment was just as productive as raised planting beds. Deborah Page-Dumroese, Martin

Jurgensen, Russell Graham, Alan Harvey Intermountain Research Station U.S.D.A. Forest Service Moscow, Idaho

*This paper will be presented at the national symposium on "Current Topics in Forest Research" in Gainesville, Florida November 4-6, 1986.

THE RELATIONSHIP OF CHARACTERISTICS TO FUELWOOD COLLECTION FOLLOWING TIMBER HARVEST

In the Western U.S., a primary source of fuelwood for people who do not own their own woodlots are the national forests. To help forest managers understand factors affecting demand for fuelwood on the Idaho Panhandle National Forests, timber sale site characteristics and fuelwood removal were studied. The specific objectives were: to measure the amount of fuelwood removed by firewood users; and, to determine what site variables most influenced firewood removal. Scattered residue variables were: harvest type (clearcut and partial cut); percent slope (0-15, 16-30, and >30); aspect to the road (up or down); distance from the road; piece size and visibility; species; and distance of sale area from town. A modification of Brown's planar intercept (1976) method was used to estimate initial and final volume and percent of scattered residue removed. The 142 transects were run perpendicular to the road to allow comparison of lines of equal length and distance. Yarded unmerchantable material (YUM) and pile volumes, in cubic feet, were calculated from measurements related to pile shape.

Results of the pile data indicate an inverse relationship between initial volume, height, and percent removed; height being slightly more significant. At least 95% of the initial volume was removed from YUM decks with the exception of very large and rotten pieces. There was no correlation between physical site variables studied and percent removed for the scattered residue. Distance from the road, piece visibility, and sale area, as it relates to distance from the Fernan Ranger District Office, showed statistical differences with percent removed: piece diameter and species type did not.

> Susan Bernatas Department of Forest Resources University of Idaho

FEATURE LENGTH MANUSCRIPTS PERTAINING TO FISHERIES AND WILDLIFE ARE SOLICITED FOR UPCOMING ISSUES OF WOMEN IN FORESTRY. GUIDELINES FOR CONTRIBUTORS CAN BE FOUND ON THE INSIDE BACK COVER. MANUSCRIPTS SHOULD BE MAILED TO WOMEN IN FORESTRY LABORATORY OF ANTHROPOLOGY, UNIVERSITY OF IDAHO, MOSCOW, IDAHO 83843 (208-885-6754).

CAN YOU HELP -----

POSITION WANTED -- FORESTER

EXPERIENCE INCLUDES--TIMBER PRO-CUREMENT FOR FIVE YEARS, RESEARCH TECHNICIAN, YOUNG ADULT CONSERVATION CORP., FORESTER ON A STATE FOREST, SOME HARDWOOD UTILIZATION. BSF IN FOREST RESOURCES, WEST VIRGINIA UNIVERSITY. WILL RELOCATE. CONTACT DIANA GENNETT, RT. 2, CALHOUN, GEORGIA 30701 {404-625-3046}.

The deadline is past for the WILDLIFE SOCIETY'S CONSERVATION EDUCATION AWARD for 1987, but readers should be thinking about the 1988 award which will feature "writing" as a subject. For more information contact the Executive Director, The Wildlife Society, 5410 Grosvenor Lane, Bethesda, Maryland 20814, or the current chair for the awards, Luann Sewell Waters, at 405-665-2323.

Greg Ptacek and Ethlie Ann Vare, co-authors of an upcoming book titled Mothers of Invention: Great Creative Women in History are TRYING TO IDENTIFY WOMEN WHO HAVE MADE IMPORTANT CONTRIBUTIONS TO SCIENCE AND TECHNOLOGY, both historically and today. The authors may be contacted at 303 California Avenue #203, Santa Monica, California 90403: (213-936-5677). Collect calls will be accepted by both authors.

The American Cave Conservation Association's (ACCA) PURPOSE IS TO PROTECT CAVES and their related natural resources, and teach people to manage caves properly. ACCA operates a clearinghouse to provide information to conservationists who are trying to protect caves. Members receive a quarterly magazine, American Caves, a management series, and other professional papers and mailings. They also receive the opportunity to take an active role in protecting our cave resources. ACCA's role is to help members be successful in this. Regular membership dues are \$10 per year--a life membership is \$200 (\$150 until this fall). As the only national organization dedicated solely to protecting caves, ACCA needs support. For more information contact George N. Huppert, President ACCA, P.O. Box 7017, Richmond, Virginia 23221 (804-359-6353).

Each vear (since 1975) the INTERNATIONAL SOCIETY OF ARBORICULTURE HAS AWARDED GRANTS TO ENCOURAGE SCIENTIFIC RESEARCH ON SHADE TREES. Horticulturists, plant pathologists, entomologists, soil specialists, and others, are invited to submit a two-page proposal for a grant of \$1500 to underwrite equipment, personnel, or research needs. Fifteen grants are available. The deadline for submission is December 1, 1986. For guidelines, write to Francis W. Holmes, Director of Shade Tree Laboratories, University of Massachusetts, Amherst, Massachusetts 01003.

An EXHIBIT OF WILDLIFE PHOTOGRAPHY FROM INDIA, cosponsored by India's Department of the Environment and its National Museum of Natural history in New Delhi, will be on display in New York, Los Angeles, and Albuquerque in 1986. More information about the exhibit is available from Patrice Benneward, Office of Public Affairs, American Museum of Natural History, Central Park West at 70th Street, New York, 10024.

The Washington State Department of Natural Resources is COMMITTED TO INCREASING THE POPULATION OF WOMEN AND MINORITIES IN THE PROFESSIONAL AND SKILLED CRAFT WORKER CATEGORIES within its work force. They maintain a resume file to encourage qualified persons to apply for specific positions as they come open. Resumés from individuals with education and experience in forestry, engineering, geology, automotive or equipment repair, carpentry, cartography, computer analysis and design and other fields related to natural resource management are needed. Interested persons should write or call: Personnel Office, 1102 S. Quince St., Olympia, Washington 98504, (206-753-5310).

I am working with a graduate student on a HISTORY OF WOMEN IN NATURAL RESOURCES SLIDE PRESENTATION. Would you or your readers have any ideas on contacts we should make for reference material? We plan to use the program at a Regional Women in Natural Resources Conference which will be held in Minneapolis next April. Write to Christine L. Thomas, Assistant to the Dean, College of Natural Resources, Stevens Point, Wisconsin 54481. I especially enjoyed the Spring '86 issue of Women in Forestry because I was not able to attend the Women in Natural Resources conference. One issue that was alluded to in some of the articles is the unemployment/underemployment of women in the natural resource fields, which occurs when women leave their jobs to move or have children, or simply because women are not as skilled as men in 'climbing the ladder.' This is an issue of interest to me because I moved with my husband to an urban area where I was not able to find the type of job I wanted.

area where I was not able to the type of job I wanted. I know that in other fields where employment can be scarce (specifically sociology), those who are UN- OR UNDER-EMPLOYED HAVE FORMED A SUPPORT/INFORMATION EXCHANGE GROUP. Are there enough natural resource people in this position that such a group would be worthwhile? If others are interested in such a group, perhaps they could contact me. If I can find the time, I would like to research this issue--perhaps I can pull together enough figures for a short article. Write: Joyce C. Ulbrich, 903 Lincoln Ave., Prospect Park, Pennsylvania 19076.

ASSISTANT PROFESSOR OF FOREST BIOLOGY DEPARTMENT OF FORESTRY RESOURCES COLLEGE OF FORESTRY UNIVERSITY OF MINNESOTA CLOSING DATE -- NOVEMBER 1, 1986

FULL-TIME TENURE-TRACK APPOINTMENT. PH.D. IS NECESSARY, WITH CONCENTRATION IN BIOLOGY, RESEARCH COMPETENCE IN SOME ASPECT OF BIOTECHNOLOGY AND AN ABILITY TO COMMUNICATE WITH FIELD SILVICULTURISTS - AT LEAST ONE DEGREE IN FORESTRY IS PREFERRED.

RESPONSIBILITIES INCLUDE RESEARCH IN BIOTECHNOLOGY WITH APPLICATION TO FOREST MANAGEMENT, TEACHING, AND ADVISING. SALARY IS COMMENSURATE WITH QUALIFICATIONS. POSITION AVAILABLE 1 MARCH 1987.

TRANSCRIPTS. RESUME . SEND SUMMARY OF RESEARCH PLANS, AND THREE LETTERS OF REFERENCE TO DR. MOHN, DEPT. OF FOREST RESOURCES, UNIVERSITY OF MINNESOTTA, ST. PAUL, MINNESOTA 55108 OR CONTACT ANN MAYHEW, ASSISTANT TO THE DEAN AT 612-624-0793. THE UNIVERSITY OF MINNESOTA IS AN EQUAL OPPORTUNITY FDUCATOR AND EMPLOYER, AND SPECIFICALLY INVITES AND ENCOURAGES APPLICATIONS FROM WOME'N AND MINORITIES.

CAN YOU HELP

FACULTY POSITION IN FOREST PRODUCTS MECHANICAL PROPERTIES OF WOOD AND STRUCTURAL DESIGN UNIVERSITY OF MINNESOTA CLOSING DATE -- NOVEMBER 14,1986

TWELVE-MONTH, TENURE TRACK, RANK AND SALARY DEPENDS ON QUALIFICATIONS AND EXPERIENCE. AVAILABLE JANUARY 1987. RESPONSIBLE FOR RESEARCH IN THE MECHANICAL PROPERTIES OF WOOD AND/OR WILL. STRUCTURAL DESIGN. TEACH UNDERGRADUATE AND GRADUATE COURSES. PH.D. IN WOOD SCIENCE, MECHANICS, MATERIALS SCIENCE, CIVIL ENGINEERING, OR RELATED AREA. MINIMUM QUALIFICA. TIONS RANGE FROM A DOCTORATE AT TIME OF APPOINTMENT FOR PROBATIONARY ASSISTANT PROFESSOR TO A DOCTORATE EIGHT YEARS PLUS PROFESSIONAL EXPERIENCE, NATIONAL RESEARCH REPUTA-TION, AND DEMONSTRATED EFFECTIVENESS IN TEACHING AND ADVISING FOR A FULL SEND TENURED PROFESSOR. APPLICATION LETTER, CURRICULM VITAE, TWO-THREE PAGE SUMMARY OF RESEARCH PLANS, THREE REFERENCE LETTERS, AND TRANSCRIPTS.

CONTACT DEPARTMENT OF FOREST PRODUCTS, UNIVERSITY OF MINNESOTA, 2004 FOLWELL AVE., ST. PAUL 55108.

THE UNIVERSITY OF MINNESOTA SPECIFICALLY INVITES AND ENCOURAGES APPLICATIONS FROM WOMEN AND MINORITIES.

NETWORK/NEWSLETTER

APPLICATIONS OF ARTIFICIAL INTELLIGENCE IN NATURAL RESOURCE MANAGEMENT

Interest in the use of artificial intelligence and expert systems in natural resource management has grown considerably in the past few years. AI systems are being developed in forest engineering, fire management, silviculture, pest management, and many other areas. These systems are being used for professional development and education, distribution of expert advice to decisionmakers, transfer of new technology, and as "user friendly" interfaces for more conventional models and planning programs.

We are developing a network of people interested in applications of AI to natural resource management. As part of this effort, we are initiating publication of an informal newsletter for exchange of ideas and sharing of information about the types of projects we are working on and the approaches and techniques we are finding most useful.

If you would like to be part of this network, send us:

- · Your name and address
- A description of your specific interests in Al
- Details of projects, publications, meetings, training opportunities, etc., that would be of interest to others
- · Any other information that you'd like to share

Write to: Molly Stock Department of Forest Resources University of Idaho Moscow, Idaho 83843

Michaelsen's Micro Magic

306 Walnut Drive Fredericksburg, Virginia 22405 (703) 371-7522

To Natural Resources Professionals

Today the more you know, the more you are worth . . . and you can never know too much.

The fastest-changing field to learn about today is computer uses in natural resources. I write the *Natural Resources Computer Newsletter*, which covers computer applications with special relevance to: fish and wildlife biologists, foresters, ecologists, soil scientists, naturalists, and land managers. Regular features include One Person's Opinion, the Consultant's Corner, and a Question 'n Answer Column, in addition to numerous articles.

This newsletter is published six times a year, and is available only by subscription. For more information, contact Nancy Michaelsen at 703/371-7522, or send \$1 to receive a sample issue of the newsletter.

SOLICITS WOMEN IN FORESTRY CONTRIBUTIONS FOR THE DEPARTMENTS OF NEWS AND NOTES, EVENTS, RESEARCH IN PROGRESS, PUBLICATIONS, AND PEOPLE. PHOTOCOPY THE ITEM, INCLUDE THE SOURCE AND DATE PUBLISHED, (WHERE APPLICABLE) BLACK AND WHITE PHOTOS (OFTEN AVAILABLE FROM NEWSPAPERS AND MAGAZINES IF REQUESTED | AND MAIL TO WOMEN IN FORESTRY, LABORATORY OF ANTHROPOLOGY, UNIVERSITY OF IDAHO, MOSCOW, IDAHO 83843. INCLUDE A SELF - ADDRESSED ENVELOPE IF THE MATERIAL IS TO BE RETURNED.

WHEN YOU CHANGE ADDRESSES, PLEASE NOTIFY US IMMEDIATELY. THE JOURNAL IS MAILED AT BULK RATE WHICH DOES NOT ALLOW FOR FORWARDING. NOR IS IT RETURNED TO US. THEREFORE, WE HAVE NO WAY OF KNOWING THAT THE ADDRESS IS NOT CURRENT. SEND CORRECTIONS TO LABORATORY OF ANTHROPOLOGY, UNIVERSITY OF IDAHO, MOSCOW, IDAHO 83843.

GAMES

Women Play Differently From Men

Last May I attended a women's conference in Eugene, Oregon where Betty Harragan was the keynote speaker. During her talk in June, Harragan said that since she wrote <u>Games that Mother</u> <u>Never Taught You</u> (Rawson 1977, Warner 1981) women have scored few major victories in the corporate arena. I was astonished at similarities of her comments to my own experiences, especially considering my perception of the vast differences in the working worlds between a New York City woman working in public relations and a USFS forestry technician on a ranger district.

I decided to read her book, <u>Games Mother Never Taught You</u>. The book reveals the specific, unwritten rules for playing, judging, and winning the power game. She teaches the language men use so that women can understand and put their own points across. The author identifies the traditional feminine attitudes that handicap, confuse and discourage women when coping with daily challenges. She shows us how being a woman can be turned to our advantage and give us an edge over males.

Ask a woman to define "team" Harragan says and her answers emphasize a group of people working together to achieve a common goal. Ask a 10-year-old boy to define "team" and he is likely to describe a group of people performing individual roles such as catcher, pitcher and short stop. Because neither women nor men realize they define and understand the rules for team play differently they are likely to become frustrated working together.

team play differently they are likely to become frustrated working together. I am ten years into a Forest Service career and can personally attest to very similar experiences in dealing with a male-dominated work environment. Harragan's book covers topics of current concern to many working women. I heartily recommend <u>Games Mother Never Taught You</u> to/for women who work in traditional male fields. The insights, eye openers, and common experiences will surprise you, but will also increase your ability to "play the game" on the job.

Author Betty Harragan is a former public relations consultant who worked for 25 years in New York and hit her head "on every form of discrimination in existence." Reviewer Sharon Knoper is a supervisory Forestry Technician in Silviculture on the Oakridge Ranger District of the Willamette National Forest.

NEPTUNE'S REVENGE

Common Resource Produces Problems For The Future

How long can human kind continue to regard the ocean as an unlimited dumping ground? Anne W. Simon addresses the last of the common resources, the oceans and related coastal zones in her book <u>Neptune's Revenge</u>, the <u>Ocean of Tomorrow</u> (Franklin Watts 1984). The book is excellent reading for any layperson. It is full of facts and presents concepts such as continental drift in an easy to understand fashion. It presents a total picture of the oceans that I have never seen before in one place, moving from Greek mythology to present day science. Eleven chapters cover topics of fisheries, radioactive wastes, oil and mineral exploration, dumping of toxic substances, ocean rising, and international law of the sea.

cover topics of fisheries, radioactive wastes, off and minimum substances, ocean rising, and international law of the sea. In her chapter entitled "The Sea as a Sink," author Simon refers to the four horsemen which dilute, disperse, sink, and degrade pollutants. To believe that the ocean has a threshold capacity and that we can pollute it to that threshold, is absurd. Assimilative capacity is fiction. Small changes have small effects. Offshore from New Jersey and New York huge amounts of dredge spoil and sewage sludge are dumped into the New York Bight. EPA estimates that by 1987, 9 million tons of sludge will be dumped into the Bight annually. Sludge comes from treated and untreated wastes, and includes many liquid chemical wastes from industry. Contamination of fish and shellfish has occurred particularly from PCB's. In 1982, New Jersey and New York warned residents to limit the amounts of striped bass, bluefish, Atlantic sturgeon, white perch, and American eels that they eat; and trim away skin, dark meat, and fat.

The final chapter of the book is entitled "Put the Ocean First." Simon's plea is reasonable and the only rational view for the long-term future. She concludes that compromise, the tool of democratic political life, cannot be tolerated. The burden of proof that a proposed use of the sea is safe must shift to the user.

Author Anne W. Simon has written four other books on natural resources. She is a graduate of Smith College and has a Master's degree from Columbia University. Reviewer Christine Moffitt is book review editor of WIF and adjunct assistant professor in the department of Fish and Wildlife Resources at the University of Idaho.

ANNOUNCING THE 1986

WOMEN IN FORESTRY PHOTOGRAPHY CONTEST



Time to take some new shots or send us your old favorites!

Categories

- 1. Women in Natural Resources-Women may be depicted working, recreating or relaxing in the field, office, etc.
- 2. The Natural World-Scenery-(landscape, waterscape) plant or animal photos may be submitted.
- 3. Humor in Nature-Be creative.
- 4. International—Photos taken outside the U.S. that communicate the exotic flavor of foreign places through the depiction of natural landscapes, people, flora and fauna found there.
- 5. Historical—In this category you need not be the original photographer, but you or your organization must own the picture and it should be at least 35 years old.

Prizes

Winning entries will be published in *Women in Forestry*. All prize winners will receive a one-year subscription to the Journal. Two grand prizes of \$75 & \$50 will also be awarded.

Submissions

Black-and-white prints of a maximum size 5"x7" are preferred. Color prints will be accepted, but entries will be published in B&W. Glossy paper preferred. No size limit on historical photos. Group or organization submissions are permitted. Negatives or slides will not be judged.

New Deadline

All entries must be postmarked by Dec. 1, 1986. Winners will be notified by Dec. 15 and photographs will appear in the Winter '87 issue. Send entries to Berta Youtie, *Women in Forestry*, Laboratory of Anthropology, University of Idaho, Moscow, ID 83843. (208) 882-2096.

Judging

Three professional photographers will judge entries. Judging will be based on image sharpness, composition, imagination and artistic merit. Judges reserve the right not to select winners in a category if there are no entries that merit publication.

Contest Rules

Contestants may send as many as 10 entries. Please attach the category, photographer's name, address and phone number with each entry. All entries must be available for publication. If contestants would like prints returned, please specify and send a stamped, self-addressed envelope. You must know the name/address of each recognizable person in your photo and they must sign a release before it can be published (release forms will be sent to winners).

WOMEN IN FORESTRY

Information for Contributors

The journal *Women in Forestry* aims to provide information and ideas for, from, and about women on topics related to: the natural resource professions and associated social science fields; the use and conservation of natural and cultural resources; and issues of administration and personnel of special interest to women in natural resources. We want to serve as a source of ideas, contact, and support, to help women in natural resources reach their professional goals.

We seek contributions that will effectively integrate the factual, the personal, and the philosophical aspects of our profession. There is a place to express insights or experiences as brief as a few lines or paragraphs, as well as for articles several pages long. We want *Women in Forestry* to provide interesting, thought-provoking reading, and not to be merely a repository for factual data buried in esoteric technical jargon and statistics.

Look through this issue to get ideas of where and how you can contribute. Contributions in the following categories are especially welcome:

Letters and opinions	Announcements and awards
Articles and reports	Positions wanted and positions available
Interviews or suggestions for people to interview	Requests for specific types of information
Calendar events, conferences, meetings	Summaries of research in progress
Book reviews and announcements of new publications	Cartoons or other humor
News and notes	(original or clipped with source noted)
Abstracts or clippings from other publications	Advertisements
(please provide information on source)	Photographs or drawings

As you can see from this issue, our format is flexible. For material acceptable for publication in *Women in Forestry*, we will provide, as needed, help with editing, illustrations, and layout. Authors of feature articles will be sent a photocopy of the final version of their article for proofing and approval. All letters must include author's name and address, but names will be withheld from publication upon request.

With all contributions, please include your name, job title or specialty, full address, and phone number(s) where you can be contacted most easily. For longer letters, opinions, or articles, please also include a brief biographical sketch (approximately one paragraph) giving both professional and relevant personal information about yourself and your article that might interest readers of *Women in Forestry*.

Advertise with WOMEN IN FORESTRY	Name Phone
 ½ page (2½" x 2¼") for \$25 ½ page (5" x 2¼") for \$50 ½ page (5" x 4¾") for \$100 ½ page (5" x 7½") for \$150 full page (10" x 7½") for \$300 All of the above rates are for camera-ready black and white copy. A one-time offer—buy one and have it printed in <i>two</i> issues. For more information contact Lei Bammel, 325 Percival Hall, Division of Forestry, West Virginia University, Morgantown, West Virginia 26506-6125, (304-293-4411) 	Address Position or title (if student, name major) Organization (if student, name school) Amount enclosed (check one) \$15/non-student \$30.00 gov't. agencies/libraries/foreign subscription Make check payable to WOMEN IN FORESTRY Return this form with payment to: WOMEN IN FORESTRY Laboratory of Anthropology University of Idaho Moscow, Idaho 83843



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